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THE
GLASGOW MEDICAL JOURNAL.

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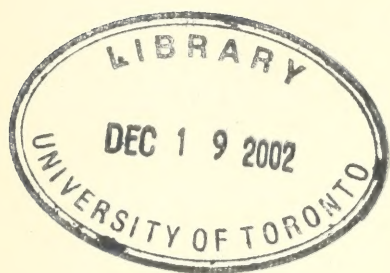
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THE
GLASGOW MEDICAL JOURNAL.

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ORIGINAL ARTICLES.

THE UNFIT.¹

By W. J. H. SINCLAIR, M.B., C.M.,
Surgeon to H.M. Prison at Barlinnie.

THE term unfit is, for the purposes of this paper, used in a general way, and is intended to include the always tired, the loafer and unemployable, the feeble-minded, the epileptic, the criminal and the alcoholic. It does not deal with the physically unfit, or the certifiably insane.

Western civilisation has made much advance within the last hundred years. Social methods and customs, which imply a new order of things, have gradually evolved as the results of experience and the application of scientific means and methods, and this gradually-evolving new order of things demands alertness and adaptability on the part of every unit in every community who would succeed.

Civilisation in its advance has little regard for such as do not keep pace with its methods. It has no sympathy with those who do not assimilate its spirit, advance with

¹ Presidential address delivered to the Glasgow Eastern Medical Society on 5th October, 1910.

its advance, and order their conduct in accordance with its laws and behests: and so it comes about that many drop out of the ranks by the way from sheer inability to keep pace with an ever onward-moving and ever more complex-growing state of society.

The fittest survive, survive in the sense of adaptation, but there is a considerable number who do not survive in the sense of adaptation which exists in every community and are a hindrance to progress, a burden to the well-disposed, veritable parasites sapping the vitality and upsetting the order of the community, and conducing by their habits to the degeneracy of the race.

Toward what goal the trend of human destiny may be it is hard to tell, but there is much waste in the process of human evolution, some which cannot as yet be controlled, but much which ought to be avoided. Of such as go to form the wastage are the unfit.

The unfit form a large class of several divisions, and their inefficiency is usually attributable to one or other of the following causes, viz.:—

1. Mental defects, either congenital or of later development.
2. Bad environment—including bad example, unsuitable, unhealthy, and badly-managed homes—defective training and discipline, and absence of religious and moral instruction.
3. Hereditary taint.
4. Alcoholism.
5. Criminal tendency.
6. Disease.

The always tired.—Some people are the subjects of a chronic lethargy from which it is usually impossible to rouse them. Too indolent to think, too tired to do other than rest, too lazy for any form of exertion, they help to swell the wreckage and add to the flotsam and jetsam of humanity. Sir Lauder Brunton says that in many of the always-tired people there is “some physical condition which renders physical exertion specially distasteful.” The bacillis coli seems to have a special power of producing fatigue toxins which also give rise to depressing emotions. It is possible that in the case of a few of the always-tired there is a mental condition which renders physical exertion a thing to be avoided, something to be dreaded.

A very interesting problem may yet turn out to be the relationship between intestinal toxæmia and the statement which is put into the mouth of a British workman. I quote

from Sir Lauder Brunton, "I eats well, I drinks well, and I sleeps well, but, when I sees a bit of work coming along, I'm all of a tremble."

There are many idlers who will not work because they find that the provision made for the deserving unfit may be shared by them.

The unemployable.—At the present time there are thousands of persons physically fit who wander about from city to city and from town to town. The stereotyped excuse which they invariably put forward, that they are looking for work, serves the double purpose of implying that the desire to make an honest and honourable living exists, and that coupled with good intention there is a perfectly justifiable and respectable attitude towards society and rectitude, for what better can a man who is out of work do than look for work. But it is a hopeless quest: such people do not hope to find work, and would not accept it if they should have it placed within their reach. Such people, when they are not enjoying private or public charity or shelter, are frequently found sleeping on stairs, at outhouses, or brickworks, and barnyards, and are sent to prison. They are mostly tramps, loafers, and beggars who have been elbowed out by their more vigorous fellowmen, often as the result of their inefficiency, sometimes by deliberate choice from inherent nomadic tendency, and occasionally from a desire to escape regular, active and disciplined habits of life.

A considerable proportion of these are mentally defective, but not certifiable under the existing Lunacy Acts. They are mostly unskilled, untrained, and undisciplined. They are unequal to sustained effort, they profit little by instruction. They are resourceless, void of ambition, and, although often of good muscular development and physique, they lack energy. Some are cheerful and chatty, but in many the emotions are dulled, the will weakened. Occasionally one is found to whom it appears to be useless effort to discuss anything. All effort is futile, a passive attitude towards all things only is becoming in one who is buffeted, neglected, and despised. His soul is seared, and to him all is vanity.

The feeble-minded.—From the Report of the Royal Commission on the care and control of the feeble-minded, it appears that the number of mentally defective in Glasgow not certified under the Lunacy Laws was, at the time of this

report, 1,614 or 0·26 per cent of the population. The area investigated corresponds to the municipality prior to extension in 1891.

If this figure holds good, the Report proceeds to say, in the case of Scotland as a whole, the total mentally-defective population of Scotland, excluding certified lunatics, would be 11,627; and the Report still further proceeds, "it is obvious that such an estimate must be accepted with great reserve," for, as is pointed out, the percentage of mentally-defective persons on the population of other areas which were investigated were:—

England and Wales, 11 typical areas,	.	0·46 per cent.
Ireland, 4	."	0·57 "
As against Glasgow's	.	0·26 "

At the time of the investigation of the Royal Commission on the care and control of the feeble-minded 10 per cent of the inmates of Glasgow parish institutions (excluding certified insane and imbeciles) were feeble-minded.

Of the feeble-minded there is a fairly large number loose on society in addition to those in institutions, and their lot is mostly a pitiful one.

As is well known, and as transpires from evidence led before the Royal Commission on the care and control of the feeble-minded, the explanation of so many feeble-minded persons being at liberty is found in the fact that the Lunacy Acts, as they at present stand, do not provide for such persons being dealt with in the same way as the ordinary or so-called certifiable lunatic may be dealt with.

It has been asserted that there are hundreds in every city that might be certified, but they are not certified, and it has been stated that to a great extent this is due to hesitation, from one cause and another, on the part of the medical profession to certify. There are statutory difficulties and there are inherent difficulties in the certification of the feeble-minded. The less the deviation mentally from the average the more difficult certification becomes.

Dr. John McPherson, Board of Lunacy (Scotland), has suggested that there should be a wider recognition of insane conduct as a sign of insanity and as a basis of certification.

The suggestion might naturally follow that the medical practitioner should on every occasion of granting a certificate of lunacy be afforded the protection of the Public Authorities Protection Act.

Under the system at present holding mentally-defective persons falling into the hands of the police pass the bar of the court, and are sentenced. Rarely, if ever, is any evidence as to the mental condition of the prisoner at the bar placed before the magistrate, except in instances where there may have been attempts to commit suicide, or where the conduct of the person at the bar may have appeared to be an attempt at self-destruction. There is no one to place such evidence: the person is sentenced and is committed to prison. In prison he is found to be feeble-minded and unfit for prison discipline. At the end of his sentence he is handed over to the parochial authorities: but often he is not a person for whose detention in a lunatic asylum the Lunacy Acts provide, with the result that he may not be sent to an asylum. In the event of his being sent to an asylum he is kept there for a short time only before he is discharged. He then returns to his old haunts, to repeat the same circuit of crime, apprehension, imprisonment, &c.

The feeble-minded are apt to pass from vagabondage through an increasingly serious grade of crime to indecent assault, rape, manslaughter, and even murder. They are untidy in their dress and habits, and, although when at large usually of uncertain temper, they are, most of them, under authority, docile and fairly civil. They are slow in movement, idle, and unequal to any sustained effort, unless under close and continued supervision, and many of them are incapable of receiving instruction with profit in any but the most elementary forms of work. They are wayward, and often addicted to habits which tend to further mental enfeeblement.

Most weak-minded men have strong sexual desire, and the percentage of illegitimate children given birth to by feeble-minded women considerably exceeds the percentage of illegitimate births on the whole population.

The average number of children in a normal family is four: the average number in a degenerate family is seven (Miss Dendy, *Charity Organisation Review*, August, 1910).

Weak-minded young men are frequently to be found in prison undergoing punishment for indecent exposure, indecent assault, and rape. Those are facts of serious racial and imperial import.

The epileptic.—The epileptic is, in many respects, peculiarly unfit. The uncontrollable impulse, the limiting effect of the seizures in relation to safe forms of employment, the uncertainty of behaviour during the post epileptic state, and the

frequent tendency to progressive nervous instability, all conduce to unfitness.

The family history of the epileptic shows a marked tendency to the transmission or inheritance of mental defect and epilepsy, and, while a great many epileptics are mentally defective, mental defect and epilepsy are the result of inherent or acquired defect in the cortex which is manifested sometimes as epilepsy and sometimes as mental defect. Whilst it is the opinion of those who have had the best opportunity of observation of epileptics that there are very few epileptics who are free from mental defect, it has been estimated that there are from 19,000 to 32,000 sane epileptics in England and Wales, that is, epileptics not certifiable as lunatics. It has been calculated that there are 6,275 sane epileptic children of school age in England and Wales, and that probably one-sixth of those epileptic children suffer from severe epilepsy.

Under the Elementary Education (Defective and Epileptic Children) Act, 1899, and Amending Act, 1903 (the only legislation which deals directly with epileptics), educational authorities are empowered (1) to enquire as to the number of children in their district who, not being idiots or imbeciles, are unfit by reason of severe epilepsy to attend ordinary public elementary schools: (2) to establish and maintain boarding schools for them: (3) to acquire, maintain, or contribute to certified schools established by other agencies; (4) to enable boards of guardians to contribute to certified schools in respect of scholars who are either resident in a workhouse or in an institution to which they have been sent by the guardians.

The first and third of these provisions have been acted on—the third only to a limited extent. There are four such schools, with accommodation for 222 epileptic children.

Regarding Scotland, the Report of the Royal Commission on the control and care of the feeble-minded has the following:—

“There are no sufficient statistics of sane epileptics in Scotland. In Scotland suitable provision for epileptics is entirely wanting.”

The position then appears to be that in Scotland, England, and Wales, there are at least 20,000 epileptics not certified as persons of unsound mind, and loose on the community. Epileptics are free to produce their kind and are responsible for bringing into the world lunatic, weak-minded, and epileptic persons. Dr. Bond, Medical Superintendent of the

County of London Colony for Insane Epileptics, regards the marriage of insane epileptics as a social crime and a sin against posterity.

Referring to the provisions of the Elementary Education Act (Defective and Epileptic Children), the editor of the *British Medical Journal* writes, in the issue of 2nd July last, "Where the Act has been adopted these children have been expensively trained until the age of sixteen, and are then, at a critical period of their lives, let loose upon the community in many cases only to work out their own perdition. The Act, however, has at least done this amount of good, that it has demonstrated the necessities of the case; and the experience of ten years has proved that it is sadly inadequate to meet them."

Alcoholism is a frequent cause of unfitness both directly and indirectly, but some persons I think attach too much importance to heredity in alcoholism. Alcoholism is not rarely a symptom of some deep-seated serious defect. The dipsomaniac or alcoholic who is a drunkard as a result of neuropathic or psychopathic defect has probably inherited such defect, and is likely to transmit it, and his progeny is likely to manifest such inheritance by emotional, volitional, or intellectual defect or any combination of these defects. But most drunkards are drunkards not from inherited defect, but because of lack of self-discipline; the attitude of the class to which they belong towards drunkenness, and, perhaps more than to any other cause, to the *habits* of their social stratum. Such people do not usually transmit such a condition of the nervous system as produces a dipsomaniac, nor are their progeny likely to be mentally defective as a result of the drinking habits of their parents.

The incorrigible, irreformable drunkard I venture with deference to suggest should be shut up indefinitely and made to work if he is physically fit. The drunkard who habitually neglects and ill-uses his children should have them taken away from him and placed in suitable State care.

The criminal.—Of the great number of persons who are lodged in jail annually in the British Islands, only a small proportion are criminals. For the year 1906, in the four largest cities in Scotland there were 6,932 persons imprisoned for crimes, and 30,588 persons imprisoned for minor offences. The great majority of persons imprisoned are simply persons who have been fined for some trivial offence, and have been unable to pay the fine. But neither punishment for an

offence nor imprisonment makes a criminal: it is the commission of a crime that makes a criminal.

Crimes are divided into indictable and non-indictable, and there is a long list of either. But crimes may be classified into three divisions, viz., (1) violence against the person or property; (2) sexual offences; (3) offences against property for spoil or gain. Each of these divisions has its counterpart in three primary emotions or psychological states, viz., malice, lust, and acquisitiveness.

It has been found by Dr. Nicolson, of Broadmore Asylum, that acquisitiveness accounts for 75 per cent, malice 15 per cent, and lust 10 per cent of indictable crimes. At anyrate there is no doubt that the most powerful incentive to dishonesty in the human mind is the faculty of acquisitiveness.

There is little room for doubt that defect on the moral side of the mental organisation, such defect as leads to criminality, is as frequently inherited defect as is the inherited defect which results in insanity, whether it be exaggerated and uncontrollable acquisitiveness, uncontrollable lust, or abnormal proneness to malicious acts. But it is absurd to suppose that all crime has its origin in mental defect.

To become a useful and law-abiding citizen, the average human being requires careful training to fit him or her for the advanced civilisation of the present day. The natural human instinct has to be carefully and constantly curbed and modified and gradually accustomed to the many laws and regulations which exist, so as to insure the health and the safety of the individual and of the community. When the parents are lacking in appreciation of and respect for those conditions and laws the children are usually lawless. Children who lose a parent or both parents, in their early childhood especially, frequently become criminals. The surviving parent has to go to work, and there is no one to attend to the children and send them to school. Truancy is practised, and the child runs about the streets, begins to steal from other children, to pilfer from shopdoors, to stay out at nights, to break into stores and shops and get good things to eat and drink, and also cigarettes, and, later, things to sell or pawn.

Dissolute and drunken parentage is productive of criminal progeny. Overcrowding leads to a lowering of the moral sense, to the necessity for a struggle to hold one's own in the scramble for a footing or a place to lay one's head. It also leads to a strengthening of acquisitiveness and a determination to possess without scruple as to the rights of others.

The picture of a father and mother, sons and daughters, and perhaps one or more lodgers, huddled together in one apartment is too revolting to enter upon. But anything more likely to destroy self-respect, modesty, and chastity is not easily conceivable.

Is mental defect transmissible?—On this point apparently something may be said *pro* and *con*. There is, to say the least, great probability that the offspring of parents who are themselves mentally defective are less likely to be of vigorous and well-balanced mental constitution than the offspring of parents who are of normal mental constitution.

A great authority, Dr. Charles Mercier, says "insanity"—and mental defect is the same thing—"is, in mathematical terms, a function of two variables. That is to say, there are two factors, and only two, in its causation, and these factors are complementary. Both enter into the causation of every case of insanity, and the stronger the influence of one factor, the less of the other factor is needed to produce the result. These two factors are, in brief, heredity and stress."

The Royal Commission on the care and control of the feeble-minded took much evidence on this point, and the evidence led by medical men and other persons having opportunities of observing the mental condition of the children of weak-minded persons indicated that every indication favoured the probability of mental defect not only being transmissible but of its being "actually, frequently, and truly transmitted."

To a society of medical men it may appear superfluous to discuss this point, but a quibble has been raised regarding the probability of the support of the British public to recommendations for special legislation for the feeble-minded, on the ground that the medical profession is divided and cannot state definitely whether or not insanity and feeble-mindedness are hereditary.

While making provision for the care and control of the unfit it is probably of equal importance to enquire what remedies are possible for the prevention of a continuous and ever-increasing number of inefficient and unfit human beings being born into the world.

Legislation along the lines indicated by the Reports of the Royal Commission on the care and control of the feeble-minded and of the Committee on the Inebriates Acts would do much to improve the conditions of those persons with whom they deal, and, in so far as they made for the segregation of such people and the prevention of mixing of the sexes,

they would play an important part in the process of the elimination of the unfit. But while it is of importance that the State should take means for the care and treatment of the feeble-minded, the dipsomaniac, and the epileptic, and should protect society from the misdemeanant and the criminal, it is probably a more important and more urgent duty of the State to take measures to limit to the utmost the production of such persons. Among such persons marriage should be prohibited and illegitimacy made impossible.

The flower of the youth of our country is emigrating, and the increased and ever-increasing costliness to the middle and upper lower classes in this country in bringing up a family has tended materially to lessen the numbers of the families of those classes. The national supply of the best stock is thus curtailed while the inferior stock appears in ever-increasing numbers.

The ratio of certified lunatics in England is now 1 to 277. Twenty years ago it was 1 to 337 only. The ratio of inefficient and undesirables, including lunatics, is in these islands probably not less than 1 in 200 of the population. The racial and imperial outlook is none too cheering. A stern repression of the reproduction of the unfit by segregation or sterilisation or both appears to be required in the interests of the race.

The always-tired, the loafer, and the unemployable.—Personal inefficiency in the physically fit is what has to be dealt with in this class. Proof of lack of real personal effort to obtain work or of persistent idleness, nomadic habits, and begging should be regarded as cause of forfeiture of liberty. Such persons, I venture to say, should be confined for indeterminate periods in labour colonies and farms, and made to work under disciplinary control and under penalty on escape. Under care and skilled management a fair amount of useful work may be done by the great bulk of such people. Probably a gradation of labour and farm colonies would be necessary, providing for the better-disposed, conditions approaching home life and a lenient discipline: for the obdurate and refractory, and for such as escaped or endeavoured to escape, a sterner discipline.

Treatment of the criminal.—Of all efforts to class criminals, that which provides for their treatment and imprisonment in classes is probably of most value. In attempting to make

amends for the lack of training and discipline in youth, and in some measure to equip them for earning a living on release, there has been instituted a system called the Borstal system, in which young adult criminals from 16 to 21 years of age, physically and mentally suitable, are taught to use their hands in learning the various handicrafts, to take an interest in useful work, and to acquire the habit of sustained interest and effort.

Supplementary to this there are physical exercises, free social intercourse at meals and in the reading-rooms and recreation halls. There is generous encouragement to such as do well, and stern disciplinary dealing with the refractory. The system, there is good reason to believe, is producing good results. There is a Borstal association, having an influential membership of persons interested in the scheme, who keep an eye on those lads when they are released and endeavour to find employment for them, and to influence them for good in every way.

The ordinary criminal.—For this class the ordinary prison system, developing as it is on humanitarian and scientific lines, is probably best suited.

There has lately been engrafted upon former legislation for the punishment of crime, legislation dealing with the recidivist or person who persists in a criminal life, and who has repeatedly been sentenced to imprisonment. On proof of three previous convictions, or a life of persistent crime, the judge has the power of sentencing such a person brought before him for trial to a term of years (five to ten years) preventive detention in addition to the ordinary sentence of penal servitude. During the term of preventive detention, which follows the term of penal servitude, the prisoner has privileges somewhat analogous to, but less liberal than, those enjoyed by the young adult under the Borstal system.

The principle underlying this prolongation of confinement by adding to the ordinary sentence a sentence of less penal severity is that of preventing the criminal from having opportunity to commit crime, thereby insuring the person and property of the citizens. But it has not yet been deemed prudent to carry this principle to its logical conclusion, and to shut up the confirmed criminal for the term of his natural life. Such persons have forfeited their rights of citizenship and their continued incarceration would be no more than bare justice to the orderly and law-abiding section of the community.

In the punishment of offenders and criminals, and more especially of youths and young adults, there has come about a tendency to leniency within recent years, both in respect of sentences and penal methods. For some time there has been in operation a system of probation guardianship, under the Probation of Offenders Act. When the magistrate is satisfied that the particulars before him justify such action in any case, the sentence which otherwise would have been imposed is suspended and the offender is placed on probation under supervision. If the conduct of the probationer while under probation is satisfactory the sentence is cancelled. The Act is permissive and has not been generally adopted, but in Glasgow and Dundee, where it has been in operation for some time, it has reduced the number of imprisonments.

The Royal Commission on the care and control of the feeble-minded in their report state that the principles on which is based their suggested solution of the problem which was submitted to them are briefly as follows:—

1. Persons who cannot take part in the struggle for life owing to mental defects, whether they be described as persons of unsound mind, idiots, imbeciles, feeble-minded, or otherwise, should be afforded by the State such special protection as may be suited to their needs.

2. The mental condition of such persons, and neither their poverty nor their crime, is the real ground of their claim for help from the State.

3. If the mentally defective are to be properly considered and protected as such, it is necessary to ascertain who they are, where they are, and to bring them into relation with the local authority.

4. The protection of the mentally defective should be continued so long as it is necessary for his good, not only in his own interest, but in the interest of the community.

5. In order to supervise local administration of this nature a central authority is indispensable.

6. In regard to the protection of property all mentally defective persons should have like privileges.

7. There should be the closest co-operation between judicial and administrative authorities.

The Royal Commission have been guided by these principles in the recommendations which they have made. The Commission condemn the present way of dealing with the mentally defective by several central authorities and at many administrative centres, and have recommended that for their

sufficient treatment and supervision there should be one central authority. The constitution, title, functions, powers, and jurisdiction of the proposed central authority are set forth. To act under the central authority it is recommended that there be local authorities whose functions, composition, powers, and jurisdiction are set forth in a series of recommendations.

Recommendation XXXVI provides for the appointment of certifying medical practitioners whose services shall be a "public duty," so as to secure for them the benefit of the Public Authorities Protection Act, 1893.

That in Scotland the General Board of Lunacy undertake the general protection and supervision of all mentally defective persons, and the regulation of the provisions made for their accommodation and maintenance, care, treatment, education, training, and control, and that it be designated the Board of Control, and its members Commissioners of the Board of Control. Local authorities to act under the Board of Control.

Children.—Personally I feel that any legislation which essays to grapple seriously with the problem of the unfit should have, as one of its leading principles, the rescue of those children whose environment is such that its natural result is the production of inefficients. A healthy child is potentially a valuable State asset. The children of dissolute, criminal, and inefficient persons should, I venture to submit, be taken charge of by the State, and boarded-out under suitable conditions in the country, under regular and proper inspection. Children who have the worst example, who are accustomed to hear the vilest language, and see the worst sights: who know nothing of honour, of religion, or moral training: who have no one to control them in self-restraint: have the environment (and environment is the greatest factor) which produces the unfit. Boarded-out with families engaged in agricultural work in the country those children would have better example, regular meals, fresh air, and also opportunity of acquiring knowledge of farm work and a love of country life. Such a scheme might eventuate in leading back to the land.

Educational methods.—Probably the system of the elementary education of our country helps to some extent in

the production of wastrels, hooligans, and criminals. It is, I venture to submit, too literary and secular. Too much time is spent in book learning. More specialised training with the view of fitting boys for trades and girls for housekeeping is urgently required. Co-ordination of apprenticeship and domestic service with attendance at school, all under proper inspection, would lessen the number of blind-alley boys and girls and help materially to diminish the numbers of the inefficient. At the same time it ought to be possible to teach the broad facts and fundamentals of Christianity without meddling with dogma or inducing a sectarian atmosphere in schools.

Many boys and girls leave school at the earliest moment permissible under the Education Acts. The great majority of those young people are not in a position to do any work requiring skill or specific knowledge. If their parents are fairly well-to-do and in a position to support them until they have gained skill sufficient to enable them to earn a living wage, all may be well: but if not, the force of circumstances urge those young people into such forms of employment as will yield such immediate return in money as to sensibly help the family purse. Too often the employment is that of message boy or girl: soon the wage becomes inadequate and the messenger becomes too old for the work, and casual labour with its serious uncertainty may be a step, or it may not, to unemployment, loafing, and vagabondage, or the young person may take to street trading, which too often leads to gambling, thieving, and prostitution.

To summarise.—There is a large and increasing number of unfit people at large in this country. The influence of those people while at large is hurtful to the community, leading to the production of undesirable stock and to large public expense. Legislation for the care and control of the unfit in their own interest and in the interest of the race is urgently called for. The physically capable and non-criminal among the unfit would probably be suitably dealt with in farm and labour colonies.

Notification and registration is probably necessary as a preliminary to the proper care and control of epileptics. Much attention should be bestowed on the health and training of epileptic children, when possible by parents, otherwise by the State. The marriage of an epileptic should be prohibited by law. Epileptics improperly cared for by their relatives should be put under care and treatment in epileptic colonies.

The shutting up for the natural term of their lives of incorrigible and irresponsible inebriates is highly desirable in their own interests and in the interests of the community. A simple and easy method of finding the feeble-minded such as notification is probably practicable. Legislation to facilitate certification and to provide for the continued confinement of the feeble-minded is urgently required.

THE DR. JAMES WATSON LECTURES ON RECENT ADVANCES IN HÆMATOLOGY.

By WALTER K. HUNTER, M.D., D.Sc.,

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(Continued from p. 417, vol. lxxiv.)

Ehrlich divides the white corpuscles normally present in the blood into six different groups, and this classification is now very generally followed. Ehrlich's grouping is as follows:—

1. Lymphocytes.
2. Large mononuclear (hyaline) cells.
3. Transitional cells.
4. Polymorphonuclear (neutrophile) cells.
5. Eosinophile cells.
6. Mast cells.

The cells in the first three groups are sometimes spoken of as the non-granular, and those in the last three as the granular leucocytes.

The lymphocyte measures on an average about $7.5\ \mu$ in diameter, but the size may range from 5 to $10\ \mu$, or even more than that. It has a single round nucleus which fills the greater part of the cell. This nucleus stains deeply with basic dyes, and may show a reticular formation. Within the nucleus one or two nucleoli, with thick limiting membrane, are to be found.

The cell protoplasm with the Romanowsky stain takes up the basic dye, and it has a somewhat granular appearance, due, certain writers believe, to the presence of fine basophile

granules. Ehrlich, however, maintains that the lymphocyte has no such granulation and that this appearance is to be ascribed to a condensing of the reticular structure of the cytoplasm, which is basic in its staining reaction. Immediately surrounding the nucleus there is a clear area in which the cell reticulum is very slightly represented. In this zone lie the fuchsinophile granules or rods, which are visible (coloured a yellowish-crimson red) on staining by Schridde's method. The cell protoplasm usually stains less intensely with basic dyes than the nucleus, though this varies in different cells as well as with the stain employed. With the triacid stain no granules of any sort are to be seen, and the cytoplasm either remains colourless or else takes on a faint pink tinge. With Giemsa's stain the cytoplasm stains a pure blue colour. With certain stains (Leishman, Giemsa) some ruby-red (azurophile) granules are to be found in the larger lymphocytes scattered throughout the cytoplasm. Sometimes these granules are very few in number and large in size, or they may be smaller and more abundant.

The margin of the lymphocyte has often a frayed-out appearance, and may show at times little bud-like excrescences. These, however, are artefacts produced by the pressure in spreading the films.

It is to be noted that the larger the lymphocyte the paler is its nucleus, and the cell protoplasm is proportionately more abundant. In the larger cell, too, the nucleus may be oval in shape and eccentric in position. It is sometimes also seen to be indented, or even divided up into two or more fragments. The largest lymphocytes are only met with in pathological conditions, such, for example, as in lymphatic leukæmia.

The lymphocyte is generally believed to be non-phagocytic, and it is a matter of dispute whether or not it possesses active amœboid movement.

It represents from 20 to 25 per cent (in infancy about 70 per cent) of all the white corpuscles in normal blood.

The large mononuclear (hyaline) leucocyte is two or more times the size of the lymphocyte and has a diameter of 11 to 15 μ . There is a large oval or kidney-shaped nucleus which occupies about half the volume of the cell. The nucleus shows a reticular formation and it stains rather feebly with basic dyes. It is often placed towards the margin of the cell, and there is no nucleolus to be

DESCRIPTION OF PLATE.

MAGNIFICATION ABOUT 700 DIAMETERS.

(For fuller description, see text.)

Figs. 1-9. *Red corpuscles* (Jenner's stain).

- Fig. 1. Erythrocyte, rather smaller than normal.
- „ 2. Megalocyte, unusually large.
- „ 3. Erythrocyte showing change in shape, and polychromatic staining.
- „ 4. Erythrocyte, with granular basophilia.
- „ 5. Normoblast.
- „ 6. Normoblast, with granular basophilia.
- „ 7. Larger normoblast.
- „ 8. Megaloblast.
- „ 9. Megaloblast, with polychromatic staining.

Fig. 10. *Blood platelets* (Leishman's stain).

Figs. 11-17. *Lymphocytes* of different sizes.

(Figs. 11, 12, triacid stain; 13, 14, Leishman's stain; 15, 16, 17, Giemsa's stain.)

Fig. 13. Shows frayed-out margin.

Figs. 14, 17. Show azurophile (ruby red) granules.

Figs. 18-21. *Large mononuclear cells*.

(Fig. 18, Jenner's stain; Fig. 19, triacid stain; Figs. 20, 21, Giemsa's stain.)

Figs. 22-23. *Transitional cells*.

(Fig. 22, Leishman's stain; Fig. 23, Giemsa's stain.)

Figs. 24-26. *Polymorphonuclear cells*.

(Fig. 24, triacid stain; Fig. 25, Jenner's stain; Fig. 26, Leishman's stain.)

Figs. 27-29. *Eosinophile cells*.

Fig. 27, triacid stain; Fig. 28, Jenner's stain; Fig. 29, Leishman's stain.)

Figs. 30-33. *Neutrophile myelocytes*.

(Fig. 30, Leishman's stain; Figs. 31, 32, triacid stain; Fig. 33, Giemsa's stain.)

Figs. 34-38. *Myeloblasts*.

(Figs. 34, 35, Giemsa's stain; Fig. 36, Jenner's stain; Figs. 37, 38, Leishman's stain.)

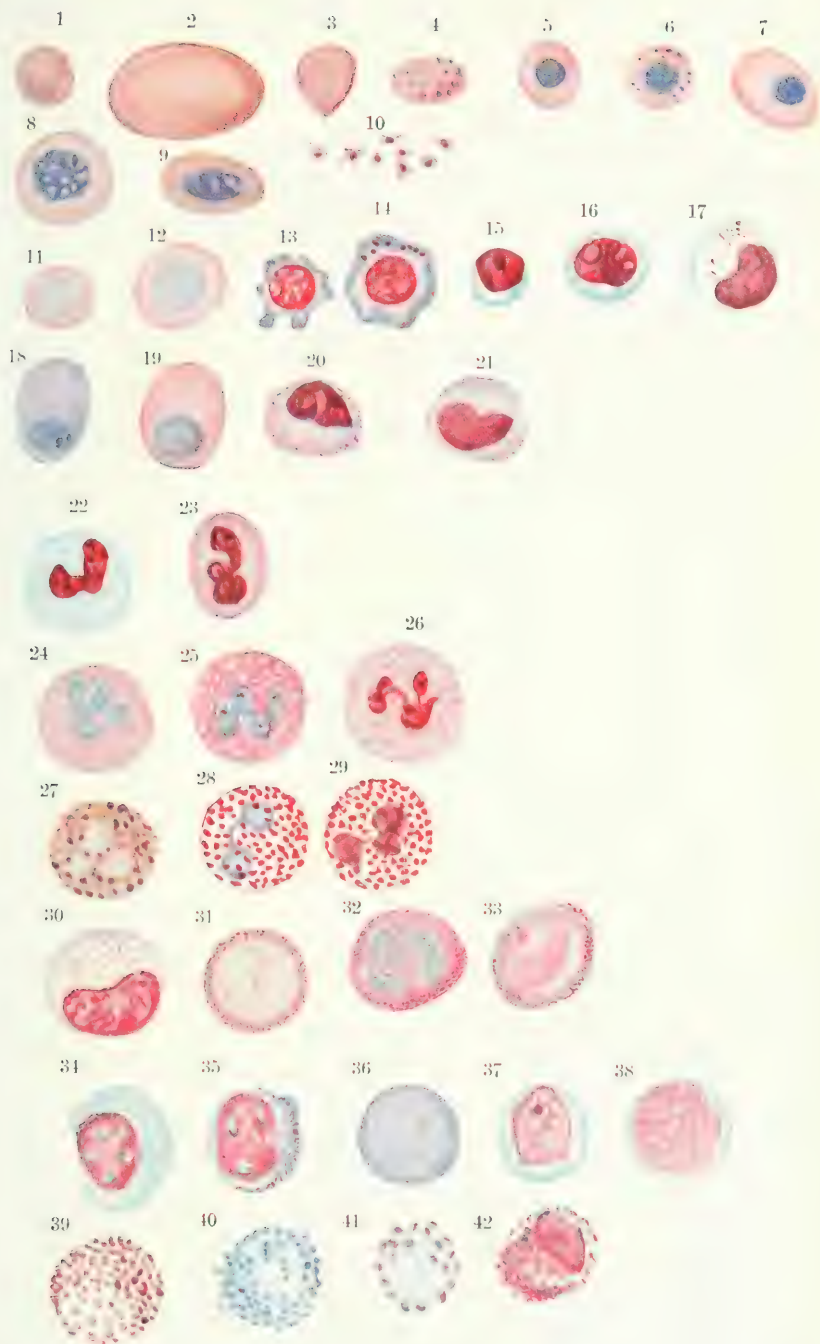
Fig. 39. *Eosinophile myelocyte* (triacid stain).

Figs. 40-42. *Mast cells*.

(Figs. 40, 41, eosin and methylene blue; Fig. 42, Giemsa's stain.)

Fig. 42 shows mature (purple) and immature (blue) granules.

Note. Figs. 11-14, 18, 19, 22, 25-30, and 37-39 are after those figured by R. M. J. Buchanan (*The Blood in Health and Disease*); those stained with Giemsa's stain are after Ehrlich and Lazarus (*Anæmia*, 1910).



seen. The cytoplasm, which has also a basophile reticulum, stains even more faintly than the nucleus, and with Giemsa's stain has a slate-grey colour. With the triacid or Giemsa stain a number of very fine neutrophile granules are to be seen in the meshes of the reticulum. They are not uniformly present throughout the whole of the cell, but sometimes they are so closely packed together as to give the cytoplasm a diffuse red colour.

The staining reactions of the large mononuclear cell may, with certain stains, be similar to those of the lymphocyte. But Ehrlich insists that the two constitute quite different types of cell, and that transitional forms from one to the other are not observed. He says that azurophile granules are not present in the large mononuclear cell. This cell is phagocytic and actively amœboid. It represents 1 to 2 per cent of all the white corpuscles in normal blood.

3. *The transitional cell* in size and general appearance is somewhat similar to the large mononuclear cell. The nucleus of the former, however, is deeply notched, and may be quite horseshoe in shape. It stains, too, more intensely than the nucleus of the latter. The cytoplasm of the transitional cell with Giemsa's stain shows the same staining reaction as the mononuclear, only the neutrophile granulation of the former is more abundant.

The exact relationships of this transitional cell are not determined. It has been claimed as an intermediate stage between the large mononuclear and the polynuclear leucocyte, and, again, as an intermediate stage between the neutrophile marrow cell and the polynuclear leucocyte. In normal blood the transitionals are not numerous, and probably do not represent more than 1 per cent of all the white cells present.

4. *The polymorphonuclear cells* measure about 10 to 12 μ in diameter, but it is not uncommon to find them smaller or larger than this. The cell has a convoluted or lobed nucleus, which is rich in chromatin, and which stains deeply with basic dyes. There is no nucleolus visible. The protoplasm of the cell stains faintly with acid stains, and it contains fine granules, of somewhat irregular shape, which are neutrophile in their staining reaction. Their colour varies in tint, ranging through different shades of violet and red, depending on the method of fixation and the pigments that have been employed. The granules are most abundant at the periphery of the cell, and scanty in the perinuclear area. Individual

cells, however, may vary a good deal in the amount of granules they contain.

The polymorphonuclear cell is actively phagocytic and amœboid. It contains oxydising and proteolytic ferments. It represents about 70 per cent of all the white corpuscles in normal blood.

5. *The eosinophile cell* is about the size of the polynuclear leucocyte, though not infrequently rather larger. It has a similar polymorphous nucleus, but usually not so much broken up. The staining, too, is less intense than that of the nucleus of the polynuclear cell. The cell protoplasm seems to remain unstained, but it contains large spherical granules which are strongly oxyphile, and which colour different shades of brown, red, or yellow, according to the special methods of staining.

The eosinophile cells are easily ruptured, hence in a blood-film eosinophile granules are not unfrequently met with free in the blood plasma.

This cell is phagocytic, and actively amœboid: it represents from 2 to 4 per cent of the white corpuscles in normal blood.

The mast cell varies greatly in size, its diameter averaging from 9 to 12 μ , though it may range from 7 to 22 μ . There is a relatively large, round, ovoid, or slightly lobulated nucleus which is situated rather towards one side of the cell. It stains faintly with basic dyes, and is often somewhat ill-differentiated from the surrounding cytoplasm, which is also basophile. The striking feature of the cell, however, is its granulation. These granules, as a rule, are coarse, but they vary a good deal in size and shape. Sometimes they are smaller than the eosinophile granules, but frequently they are considerably larger. They may have a spherical, oval, or cubical form. The granulation is usually not so abundant as with the eosinophile cell, and its distribution may be limited to one part of the cytoplasm. Generally the granules are most in evidence at the periphery of the cell, but the variations in this respect are very great. The granules show an intense affinity for basic dyes. They stain, however, metachromatically; for example, with methylene blue they stain a violet tint instead of the blue colour of the stain. But they are soluble in water and hence may disappear, or remain only as fragments, on

staining with watery solutions of any of the dyes. They are not visible on staining with the triacid mixture.

The mast cells have some amœboid movement. They are rare in normal blood—not more than $\frac{1}{2}$ per cent of all the white corpuscles: but in a disease like myelogenous leukaemia they may be present in considerable numbers. In leukaemia the mast cell, or mast myelocyte as it is then called, has much the same characters as the mast cell of the normal blood. In the mast myelocyte, however, the cell granules do not always stain metachromatically, and if they are sufficiently immature they are but little soluble in water.

Some hæmatologists¹ distinguish two types of basophile granular cells, and the term “mast cell” has been used to include both of these. In the first form the nucleus is definitely polymorphous and stains with moderate intensity. The cell granules are small (δ granules of Ehrlich), and they are not so definitely metachromatic as in the other form. In the second type the nucleus is oval, or at most trilobed, and it stains faintly. The granules, as a rule, are large (γ granules) and metachromatic in their staining. But it is not easy to draw a line between these two types, for in an individual cell there may be a considerable variation in the size of the granules, some being very large and others small: also, as we have just seen, large granules in the mast myelocyte do not always stain metachromatically.

LECTURE II.

IN addition to the above six forms of leucocyte which are present in normal blood, there are several others found in the circulation only in disease. The most important of these is the *neutrophile myelocyte*. This cell has a diameter of from 10 to 20 μ , but it is occasionally smaller or larger than that. There is a single large nucleus which is round, oval, or slightly indented, and which stains rather feebly. There is no nucleolus to be seen in the mature myelocyte. The cell protoplasm shows a fine reticulum, faintly basophile, which contains ripe neutrophile granules similar in size and staining reaction to those of the polynuclear leucocyte. These granules are most abundant at the periphery of the cell.

The neutrophile myelocyte is very similar in appearance to the large mononuclear cell of normal blood, and the

¹ *E.g.*, Da Costa.

larger size of the granules in the former seems to constitute the main point of difference between the two. Both are probably derived from the myeloblast.

The myelocyte is not generally recorded as being actively amoeboid, but it has been described as taking part in phagocytosis.¹ It is present in the blood in large numbers in myelogenous leukaemia. It is also met with in certain of the anaemias of childhood, in the infectious fevers, especially in children, and in diseases of the bone marrow.

There is another cell similar to the neutrophile myelocyte in size and in the appearance of its nucleus, but differing in having in its cytoplasm the eosinophile granules of the eosinophile leucocyte in place of the neutrophile granules of the polynuclear leucocyte. It is called the *eosinophile myelocyte*, and it is found in the blood in myelogenous leukaemia, in certain of the anaemias of infancy, and in any marked eosinophilia.

Both the neutrophile and the eosinophile myelocyte are, according to Ehrlich, originally derived from a cell to which the name *myeloblast* has been given. This cell is very abundant in the marrow of the embryo, but it is only found in small numbers in that of the healthy adult. In certain of the cases of acute myelogenous leukaemia, however, the marrow may revert to the embryonic type, and the myeloblast may then be the prevailing marrow cell, not only in the marrow, but also in the blood. There are larger and smaller forms of the myeloblast, and the former in particular are very similar in appearance to the myelocyte, differing chiefly in there being an absence of granules from their cytoplasm.

Some haematologists do not seem to recognise the existence of the myeloblast as such. Some call it a leucoblast, and some confuse it with the large (pathological) lymphocyte. But Ehrlich insists on the distinction between this last cell and the myeloblast, and he says that transitional forms connecting the two types of cell are never found. The two, he says, have a quite separate origin, the myeloblast arising from bone marrow, and the pathological lymphocyte from lymphatic gland tissue.

The following features, according to Naegeli,² serve to distinguish the myeloblast from the large lymphocyte:—The nucleus of the myeloblast stains with moderate intensity,

¹ Rowley, *Journal of Experimental Medicine*, January, 1908.

² *Anaemia*, by Ehrlich and Lazarus, translated by Armit, second edition (Rebman, Limited), 1910, p. 102.

staining much deeper with the triacid stain than does the nucleus of the pathological lymphocyte. With Giemsa's stain three to four nucleoli are to be seen as blue rings inside the myeloblast nucleus. The cell protoplasm in the myeloblast has a basophile reticulum which comes close up to the nuclear membrane, and leaves no clear perinuclear zone as in the lymphocyte. Azurophile and fuchsinophile granules are absent from the myeloblast. Certain of the myeloblasts, too, show a commencing neutrophile granulation, and all gradations between such forms and the mature myelocyte are to be met with. The nearer to the myelocyte the less basophile is the cell reticulum, and as the myelocyte stage is reached the nucleoli of the myeloblast disappear.

But, whilst these distinguishing features may be useful in the hands of the skilled histologist, they have not proved of the same service to the clinician. And so one turns with a measure of relief to another possible means of distinguishing the myeloblast from the large lymphocyte. We have just seen that the polymorphonuclear leucocyte contains oxidising and proteolytic ferments, and, as Dr. Shaw Dunn¹ demonstrated to the Medico-Chirurgical Society last winter, these ferments, whilst absent from the lymphocyte, are present in both myelocyte and myeloblast. Tests have therefore been devised whereby this ferment action of the myeloblast can be readily demonstrated, and it is claimed that a positive result with these tests serves to distinguish the myeloblast from the lymphocyte in which the reaction is negative.

The myeloblast may show some resemblance to the large mononuclear leucocyte, but in the latter the nucleus is most often kidney-shaped, and it contains no nucleoli. Its cell protoplasm, too, has a grey-blue colour when stained with Giemsa's stain, in place of the bluer blue of the myeloblast.

There are still two other forms of leucocyte frequently described, but they are rarely met with, and only in disease. They are not really additional varieties of the white corpuscle, for the first seems to be nothing more or less than a portion of a fragmented polynuclear leucocyte, and the other a myeloblast undergoing degeneration. The first has been called the *small neutrophile pseudolymphocyte*. It is the size of the small lymphocyte, and it has a large round deeply-stained nucleus with neutrophile granules in the narrow zone of surrounding protoplasm. The cell is found

¹ *Glasgow Medical Journal*, October, 1910; see also *Journal of Pathology and Bacteriology*, July, 1910.

in the blood in smallpox, and in pleural exudations. It is supposed to be, as I have just said, a portion of a broken-up polynuclear leucocyte—that is, there is a part of the nucleus with some of the granular protoplasm adherent to it.

The other type of cell is the "*irritation form*" (Reizungsformen of Türk), which is chiefly met with in leukæmia, and which Ehrlich says is a pathological myeloblast; at one time it was regarded as an abnormal nucleated red corpuscle. The cell measures some $8.5\ \mu$ in diameter, but is often considerably larger. There is a central round or oval nucleus which is homogeneous throughout, and stains with moderate intensity. There are no nucleoli. The cell protoplasm is strongly basic, and is often seen to be vacuolated. It stains deep blue with Giemsa's stain and deep brown with the triacid stain.

These, then, constitute the various types of corpuscles met with in the blood in disease as well as under normal conditions; and in order to fully understand the significance of the abnormalities, it is essential that we should have some sort of conception of the origin of all these corpuscles as well as of their mode of production.

The two tissues specially concerned with the formation of blood corpuscles are (1) the bone marrow, and (2) the lymphatic glands, with which we include the lymphatic tissue throughout the body. Ehrlich's view, which is now very generally accepted, is to the effect that the lymphocytes are produced almost exclusively in this lymphatic tissue, whilst all the other white corpuscles, as well as the red corpuscles, have their origin in the bone marrow.

In the healthy adult only a part of the bone marrow is functionally active, but in the fœtus, and during the first years of life, the whole of the marrow is highly vascular (red marrow) and takes part in the formation of blood corpuscles. As age advances, however, the red marrow lessens in amount, being replaced by fat; and in the adult the red marrow is limited chiefly to the ends of the long bones, to the ribs, and bones of the skull. But the amount of active marrow varies not only with the age of the individual, but also in different individuals of the same age. It varies, too, in different bones and in different parts of the same bone. Its amount varies most of all in health and disease, for when there is a great demand for fresh red corpuscles, as in anæmia, or for white corpuscles, as with a leucocytosis,

then the amount of the active marrow increases so that it may supply the increased demand. And not only does white marrow in this way become transformed into red marrow, but the red marrow itself may become much more active than under ordinary circumstances. The conversion of white to red marrow may affect larger or smaller areas of marrow simultaneously, but usually it is a matter of local spread from the margin of the active to the adjacent latent tissue. When all the fat cells of the white marrow have been replaced and still more blood-forming tissue is required, an absorption of bone begins to take place so as to make room for the increasing number of marrow cells.

On microscopic examination normal marrow is seen to be made up of a congeries of large fat cells held together by a fine framework of retiform tissue. In this reticulum lie the blood-forming and formed cells of the marrow. White marrow being latent contains but few of these blood cells. Red marrow, on the other hand, is exceedingly cellular, and, if specially active, may be so overrun with cells as to have the fat spaces entirely obliterated.

Certain of the marrow cells, it is found, are concerned with the production of red blood corpuscles, and constitute what Professor Muir¹ has called the erythroblastic part of the marrow. Other cells have to do with the formation of white corpuscles, and so they are called the leucoblastic marrow cells. In normal red marrow the erythroblastic and leucoblastic cells are usually found more or less mixed up with each other. In new-formed red marrow, however, an arrangement of cells into erythroblastic and leucoblastic areas can often be distinctly made out. When this is so the erythroblastic tissue is seen to consist of wide capillaries lined with nucleated red blood corpuscles, whilst towards the centre of the capillary are the ordinary non-nucleated red cells. Amongst the nucleated corpuscles are seen microblasts, normoblasts, and cells similar in appearance to the normoblast but rather larger (8 to 10 μ). In the marrow of the foetus, and in early infancy, megaloblasts are also present, and certain hæmatologists maintain that a small proportion of megaloblasts are likewise to be seen in normal adult marrow. Ehrlich, however, does not take this view, for he insists that the normoblast and megaloblast are quite different types of cell, and that the former is never derived from the latter.

The non-nucleated red corpuscle of the blood is formed

¹ *Journal of Pathology and Bacteriology*, 1901, p. 161.

from the nucleated red cell by loss of its nucleus. According to some authorities the nucleus disappears by a process of extrusion, and according to others by fragmentation and solution in the cell protoplasm. Ehrlich believes that the nucleus of the normoblast is lost by extrusion whilst the nucleus of the megaloblast disappears by fragmentation and solution.

True mitosis is not commonly seen in the nucleated red corpuscles, but, according to Dickson,¹ it is much more frequent in the larger normoblast than in the normoblast of normal size: and so in normal adult marrow this larger normoblast is probably the cell from which the non-nucleated red corpuscle is derived, the normoblast of normal size being an intermediate stage in the process of development.

The leucoblastic areas of the marrow are made up of white corpuscles, and they are said to be always extra-vascular. The prevalent leucocyte in this leucoblastic tissue is the neutrophile myelocyte. It represents from 50 to 60 per cent of all the cells and shows the most active mitosis. Then there is a smaller and somewhat variable proportion of polynuclear neutrophiles; these last are found lying nearer to the blood-stream than the myelocytes from which they are derived. A small proportion, too, of eosinophile cells, both mononuclear and polynuclear, are present, scattered amongst the other cells. About 1 per cent of mature and immature mast cells and a very few myeloblasts are also met with. In addition to these a large proportion (15 to 20 per cent) of cells which have the appearance of small lymphocytes² are to be seen: but it is rare in normal adult marrow to find them arranged so as to form definite lymph follicles.

Besides the above white corpuscles, any of which may be present in the blood-stream, at least two other types of cell are met with in bone marrow. The first of these is the giant cell. It is large (20 to 50 μ in diameter), varies greatly in size, and is very irregular in shape. The nucleus is complex in structure, sometimes described as being basket-shaped, but sometimes it seems to be polynuclear; it stains rather deeply. The cell protoplasm is non-granular and in the mature cell stains with acid dyes.

¹ *Ibid.* p. 64.

² Naegeli says these cells do not contain fuchsinophile granules, and are, therefore, not lymphocytes; he regards them as myeloblasts. He says the bone marrow does not normally produce lymphocytes (*Anæmia*, Ehrlich and Lazarus, 1910, p. 117).

The giant cells are increased in number in pneumonia, septicæmia, and other such diseases. They are phagocytic, and are often seen to contain leucocytes in various stages of disintegration.

This giant cell is probably derived from the cells of the marrow reticulum, but possibly also from certain of the marrow cells themselves.

In addition to the giant cell there are other phagocytic cells, which have been called pigment cells. They vary greatly in size, and contain a pale nucleus, somewhat oval in shape, and usually two nucleoli. The cytoplasm is non-granular, and may contain numbers of red blood corpuscles, as well as other cells, and also pigment granules. These cells are not only phagocytic but also amœbic, and are found in the marrow in considerable numbers in pernicious anæmia and other diseases where there has been much destruction of blood corpuscles. They are probably derived from the endothelial cells of the capillaries as well as from the branching cells of the marrow reticulum.

Now we have just seen that when there is an increased demand for white or red blood corpuscles that the bone marrow assumes an unwonted activity. This, to begin with, seems to affect simultaneously both the erythroblastic and leucoblastic cells of the marrow, so that there is an initial increase of red and white corpuscles. Soon, however, the activity limits itself to one special type of cell. For example, in a secondary anæmia where there is need of an increased production of red corpuscles there is now a special activity of the erythroblastic cells, and the erythroblastic areas are proportionately increased. If, on the other hand, there is a demand for white cells, as in abscess formation, it is the leucoblastic elements that show the increase. In this leucoblastic tissue, too, one type of leucocyte may show much greater productive activity than the others. In a polynuclear leucocytosis it is the neutrophile myelocytes¹ that are increased in number, whilst in enteric fever and smallpox the chief increase is in the cells resembling lymphocytes. Then, again, there may be an eosinophile leucocytosis met

¹ *Note.*—From the neutrophile myelocytes are formed the polynuclear cells. But there seems seldom to be a great reserve of these latter cells in the marrow; hence with a polynuclear leucocytosis if the myelocytes cannot produce the polynuclears sufficiently quickly to meet the demand, they the myelocytes, may themselves appear in the circulation. In long-standing leucocytosis there may not only be a great increase of myelocytes in the marrow, but also an increase of myeloblasts.

with in such diseases as helminthiasis, asthma, urticaria, and pemphigus. This must mean an increased production of eosinophile cells in the blood-forming tissues, but, as far as I know, it has not been conclusively determined that there is always an increase of eosinophile cells in the marrow corresponding to the increase of eosinophiles in the blood, although one would expect that it would be so.¹

It seems clear, therefore, that in certain morbid conditions one type of marrow cell may be stimulated to greater productive activity than the others, and that the stimulus must be a specific one, for individual diseases have their specific forms of leucocytosis. The various marrow cells, then, apparently react differently to different stimuli, and it is found that the same stimulus may produce an increase of one type of leucocyte and at the same time an absolute diminution of another. By way of illustration one might quote the observation that eosinophile cells may disappear from the blood-stream during a polynuclear leucocytosis to return again when the leucocytosis is ended.

The stimuli which are responsible for these reactions in bone marrow are probably generated at the seat of the infective process. It is well known that bacteria or their products may, on entering a tissue, have an attracting or repelling (positive or negative chemiotactic) action on the leucocytes of the blood: and certain of these chemiotactic substances doubtless enter the circulation and produce corresponding effects in the analogous marrow cells. We must note, however, that it is not always only one type of marrow cell that is stimulated in this way, for in myelogenous leukæmia we may have several forms of leucocyte—polynuclear neutrophile and eosinophile myelocytes, and mast cells, all greatly increased in number, both in the marrow and in the blood-stream. In the more acute cases of leukæmia, again, these cells may to a large extent disappear from the blood and marrow, to be replaced by the very active increase of a more primitive marrow cell, the non-granular myeloblast. A similar sort of reaction occurs in pernicious anæmia where the erythroblastic areas not only become greatly extended, but take on the megaloblastic or embryonic type of growth. In a condition to which the name leukanæmia has been given we seem to have an increased activity both in the primitive erythroblastic and leucoblastic areas, for

¹ Dickson suggests that the marrow is only one of the several sites where eosinophile cells proliferate, and that these cells may be formed in certain of the other hæmopoietic tissues (*Ibid.*).

megaloblasts as well as myelocytes are found present in the blood.

In contrast, however, to the hyperplasias of bone marrow, certain degenerative changes fall to be recorded, and these have almost always associated with them a lessened production of blood corpuscles. They may therefore determine an anæmia, or a leukopenia, or a faulty leucocytosis, or all of these.

In the first place, the extent of the red marrow of the adult may be considerably restricted, the conversion of the red marrow of the child to the white marrow of the adult becoming more extensive than normal. As a result, areas in the adult, normally red, are replaced by fat, and so are useless as blood-forming tissue.

The marrow may also undergo a gelatinous degeneration, the red or yellow marrow being replaced by a gelatinous-looking substance allied to mucin. This condition is met with after undue activity of the marrow, as with a prolonged suppuration, also in starvation, and in general debility. Drs. Stockman and Charteris¹ have produced similar changes in animals after a lengthy administration of such drugs as arsenic, mercury, or lead.

Then there may be an overgrowth of the connective tissue elements of the marrow, producing a sclerosis similar to what may be met with in the liver or kidneys. Such a change has been seen in syphilis, old age, and long-standing debility.

In addition to these changes extensive hæmorrhages have been found in the bone marrow, destroying the function of considerable areas of marrow tissue. There may likewise be tumour growths infiltrating the bone marrow and displacing the erythroblastic and leucoblastic cells. Carcinoma is perhaps the most common of these neoplasms. A tumour growth of this sort, in the process of replacing the marrow, seems to disturb its cells in some unusual way, for it is not uncommon in such cases to find not only myelocytes, but also megaloblasts appearing in the circulation. In lymphatic leukaemia, too, the marrow gets so completely replaced by the proliferating lymphocytes that in many cases not more than 3 to 4 per cent of granular leucocytes are to be met with in the blood.

We have seen, then, that the bone marrow is the tissue

¹ *Journal of Pathology and Bacteriology*, 1903.

chiefly concerned in the formation of blood corpuscles. But the lymphatic glands also play a part, and it is they that are responsible for the production of most of the lymphocytes that are present in the blood.

In its general structure the lymph follicle of the lymphatic gland resembles somewhat that of the bone marrow. As in the marrow there is a very fine reticular tissue in the meshes of which lie numerous cells, the cells in the case of the lymph follicle being entirely lymphocytes. These cells present something of a concentric arrangement, the ones at the centre (germ centre) being larger and showing active mitosis, whilst those at the periphery are the smaller, mature lymphocytes. From the periphery of the follicle the lymphocytes pass into the lymph sinuses, thence into the lymphatic vessels, and so to the blood-stream. It has been demonstrated that there are more lymphocytes in the efferent than in the afferent vessels of the lymphatic gland; hence more lymphocytes leave the glands than enter them. It seems quite clear, therefore, that the lymphatic glands supply lymphocytes to the blood of the general circulation.

Under ordinary circumstances blood-vessels do not open into the lymph channels of the lymphatic glands: but certain of the prevertebral glands form an exception to this statement, for their sinuses may be seen to contain red blood corpuscles. Such glands are called hæmolymph glands, and seem to be concerned in the destruction of red corpuscles: in this respect they have a resemblance to the spleen.

In lymphoid tissue, as in bone marrow, the cells of the reticulum and the endothelial cells lining the sinuses are actively phagocytic. Indeed, one of the chief functions of the lymph glands is to act as a filter to the lymph stream, and to deal with such foreign substances as dust, disintegrating blood corpuscles, tumour cells, micro-organisms, &c., such as may be present in the lymph channels. In any infection of the lymphatic glands there is nearly always a proliferation of the endothelial cells: and in enteric fever the proliferation may be largely confined to these cells, and may be so considerable as to produce a distinct glandular enlargement.¹

The most common enlargement of the glands, however, is due to a hyperplasia of the lymphocytes themselves; and so one sees enlargement of the germ centres, more active mitosis, increase in the size of the follicles and in the number of lymphocytes in the sinuses. The entrance into the gland

¹ Muir, *Trans. Path. Soc. of Lond.*, vol. liii, part 3, 1902.

of foreign material seems at times to act as a stimulus to this hyperplasia. If the stimulus reaches the gland by the lymphatic vessels not more than a group of glands will be enlarged. If, on the other hand, it comes by the blood-stream there may be a general glandular enlargement, such as one sees in glandular fever and in other blood infections.

But the hyperplasia of lymphoid tissue, even when widespread, does not always determine an increase of lymphocytes in the blood. Ehrlich has always taught that lymphocytes have no amoeboid movement, and that they do not respond to chemiotactic influences. When a lymphocytosis does take place there is, he says, increased functional activity of the gland, but the movements of the lymphocytes are entirely passive, for they are washed out of the glands into the lymph stream, an increased flow of lymph carrying out an increased number of lymphocytes. This view, however, is not universally accepted, some hæmatologists holding that the lymphocyte has amoeboid movement and that it does respond to chemiotactic influences.

A lymphocytosis is, on the whole, rather a rare occurrence, at least when compared with the polynuclear leucocytosis. Perhaps the best example is the lymphocytosis of whooping-cough, which may reach from 20,000 to 40,000 per c.mm. If such a lymphocytosis is passive it would be explained as due to swelling and irritation of the peribronchial glands during the paroxysms of coughing. It is to be noted that in infancy, where there is greater activity of the lymphoid tissues, the proportion of lymphocytes in the blood is always considerably larger than in the adult. In the illnesses of infancy the blood readily shows both a relative and absolute lymphocytosis.

But in contrast to the lymphocytosis there may be an absolute as well as a relative diminution in the number of lymphocytes in the blood. Such a condition may be produced by a widespread disease of the lymphoid tissues. There may be simple atrophy, as met with in old age, in anæmia, and cachexia. There may be a fatty or hyaline degeneration, or a fibrosis or calcification of the glands. Any of these, if widespread, might determine a diminution in the production of lymphocytes. Tumour growths may act in the same way by displacing the lymphoid tissues of the glands: secondary sarcomatous, carcinomatous or endotheliomatous growths are not uncommon in lymphatic glands. The primary neoplasms met with are more often associated

with hyperplasia rather than with destruction of the lymphoid elements. With these primary growths I include lymphosarcoma, lymphatic leukaemia, and pseudo-leukaemia. There seems to be all degrees of malignancy in such hyperplasias, ranging from the simple hyperplasia to what might be called the hyperplasia of lymphosarcoma which infiltrates the gland capsule and extends to the neighbouring tissues. In lymphatic leukaemia there is usually a very great increase of the lymphocytes in the circulation. The same may apply to lymphosarcoma, but in the other growths the numbers of white corpuscles remain more or less normal. Finally, in myelogenous leukaemia the lymphoid tissue may in part be transformed into a tissue resembling red bone marrow, and so different varieties of granular leucocytes may thus be produced in the lymphatic glands.

I have thus described to you the two tissues chiefly concerned in the production of white and red blood corpuscles, as well as some of the changes that may take place in these tissues as a result of disease. Incidentally, too, we have seen that when one type of cell has been proliferating to an excessive degree, it may reach what seems to be the limits of its reproductive power. The proliferation is then taken up by a more primitive cell, which now becomes the prevailing cell in the marrow or lymphatic gland and probably also in the blood. In pernicious anaemia, for example, where there is a great increase in the activity of the erythroblastic part of the marrow, the normoblasts become to a large extent replaced by megaloblasts. In the same way in myelogenous leukaemia the proliferating neutrophile myelocyte may give place to the non-granular myeloblast. The more acute the process the more primitive seems to be the proliferating cell. This is well illustrated not only in myelogenous but also in lymphatic leukaemia, in the most acute forms of which the prevailing cell is the large immature lymphocyte rather than the normal lymphocyte of the blood. In the anaemias of infancy, too, there seems to be a special tendency for these embryonic cells to proliferate, and the younger the subject the more readily do the marrow cells assume their embryonic activity. This leads us, then, to enquire as to the nature and origin of these primitive blood corpuscles, and as to their relationships to each other and to the more mature blood cells.

Now we know that the bone marrow and lymphatic glands are not functionally active till the fourth or fifth month

of foetal life, and, as blood corpuscles appear in the foetal circulation considerably before this, it is quite apparent that they must be originally produced in some tissues other than those just mentioned.

The earliest appearance of at least the red corpuscles seems to be associated with the formation of the blood-vessels. To begin with, red corpuscles are probably formed in several different organs, but at a slightly later period the liver is their chief seat of origin. At this period of embryonic life it is exceedingly difficult to differentiate between the primitive red and the primitive white corpuscles: and indeed certain hæmatologists (Pappenheim and others) hold that originally there is only one type of blood corpuscle, resembling in appearance the large lymphocyte, and that this cell is the common ancestor of both the red and white corpuscles. Further, it is also said that before the third or fourth month of embryonic life there is only one type of white corpuscle, from which all others are ultimately derived, and that it has the general character of this large lymphocyte. Ehrlich, however, disputes this view, and he maintains that the lymphocytes and marrow cells have no common ancestor, and that they are genetically distinct. Naegeli¹ supports Ehrlich's conclusions, and he claims to have proof that the myeloid tissue develops first, and that at a considerably later period lymphoid tissue appears as a quite separate phenomenon. He says that cells of the myeloid series are in the blood before any lymphocytes can be found.

We may say, then, that it is a matter of dispute whether the red corpuscle has a common ancestor with the white corpuscle or is genetically distinct. Whichever it be, the earliest recognisable form of red corpuscle is a nucleated cell without hæmoglobin and in general appearance not unlike a large lymphocyte. This red corpuscle next acquires hæmoglobin and then has the characters of the megaloblast. About the fourth or fifth month the megaloblast seems to settle down in the bone marrow, and there it proliferates, forming the erythroblastic (megaloblastic) part of the marrow. At birth the megaloblasts have to a large extent disappeared from the marrow and been replaced by normoblasts. There is a difference of opinion as to whether or not the normoblasts are derived directly from the megaloblasts. The normoblast then loses its nucleus, and so the mature red corpuscle is evolved.

¹ *Anæmia*, Ehrlich and Lazarus, 1910, pp. 119 and 148.

It is likewise in dispute as to whether various white cells are derived from one common ancestor, the primitive lymphocyte: or from two separate cells, one of myeloid origin and the other of lymphoid origin. Whichever it be, some of these primitive cells settle down in the lymph glands and these produce lymphocytes. Others proliferate and produce myeloid tissue, first in liver, spleen, and other tissues, and later in the bone marrow. The original marrow cell is the myeloblast. From this are derived the neutrophile and the eosinophile myelocytes, the mast myelocyte, and the large hyaline cell. From the neutrophile and eosinophile marrow cells, the polynuclears and eosinophiles of the blood are respectively derived. A small proportion of polynuclears probably also take origin from the hyaline (large mononuclear) cells, the transitional cell being the intermediate stage between the two. It is in dispute as to whether or not the marrow normally sends any number of lymphocytes into the blood-stream: and it is very doubtful if the mature lymphocyte, or even a primitive lymphocyte, ever becomes transformed into one of the granular cells or into the hyaline cell. Neither is there any good reason for thinking that the neutrophile cells ever become eosinophile cells, or mast cells, or *vice versa*.

It is a matter of some difficulty to determine what exactly takes place when lymphoid tissue gets replaced by myeloid tissue, as it does in certain cases of myelogenous leukaemia: or when myeloid cells of the bone marrow are replaced by lymphoid cells, as in lymphatic leukaemia. Ehrlich would deny the possibility of the transformation of one type of cell into the other by, for example, the germinal centres of lymph follicles producing myeloid cells. And there are reasons in favour of the view that there is not a transformation of one tissue into the other but a replacement of one by the other.¹

There seems reason, too, for believing that this replacement does not altogether depend on a transplantation of the myeloid or lymphoid cell by, for instance, the blood-stream, but that the growth takes place from a pre-existing cell. The pre-existing cell, Naegeli² seems to think, is an undifferentiated cell lying in the tunica adventitia of the vessel wall. Whether there is only one type of cell, which may differentiate into a myeloid or a lymphoid cell according to the stimulus, or two types of indifferent cell, one

¹ *Anæmia*, Ehrlich and Lazarus, 1910, p. 148.

² *Ibid.*, p. 150.

promyeloid and one prolymphoid, must at present remain in doubt.

Another suggestion by Naegeli¹ is to the effect that such undifferentiated cells may previously have been differentiated and have returned to their embryonic or indifferent state, to again, under suitable stimulus, assume their former function. We know that in early embryonic life the liver, spleen, and lymphatic glands show myeloid growth which disappears on the maturing of the bone marrow. The myeloid metaplasia in these organs, met with in myelogenous leukaemia, certainly looks like a return of these tissues to their former type of activity.

In addition to the red and white corpuscles in the blood there is a third element that has to be considered, namely, the *blood platelet* or *blood plate*. This body is round or oval in shape, and measures about $3\ \mu$, with a range from 1 to $5\ \mu$. With the Romanowsky stain it takes a bluish tint at the periphery, whilst at the centre it has a granular appearance and stains a reddish-purple colour. The blood plate, however, has no true nucleus, and indeed no definite structure whatever. Its staining reaction is alkaline, and it contains glycogen.

The blood plates in normal blood are said to range in number from 200,000 to 700,000 per c.mm., but the methods of estimation are not satisfactory, and these figures may not be accurate. The platelets are increased in pneumonia, secondary anæmia, chlorosis, and in most wasting diseases, whilst they are lessened in purpura hæmorrhagica and hæmophilia. The fact that they are so greatly reduced in the last two diseases has suggested the idea that the blood plates have to do with the coagulability of the blood, and it has been determined that blood will not coagulate in the absence of blood plates. They seem also to have adhesive properties, and they tend to form clusters whenever the blood is shed.

Ever since the discovery of the blood plates there has been much difference of opinion as to their origin and significance. Hayen, who was the first to describe them, regarded them as the ancestors of the red corpuscles. Others maintain that they are artefacts produced after the blood has been drawn, and that they have no existence in the circulating blood. Others, again, regard them as little buds nipped off from the red corpuscle, or as extrusions from this corpuscle, remnants possibly of its lost nucleus. Some

¹ *Ibid.*, p. 151.

authors have thought the plates to be extrusions from the white corpuscle: and, lastly, J. H. Wright has brought forward evidence in favour of their being derived from the processes of the giant cell of the marrow. It is difficult to be certain what is the true origin of the blood plates, but the consensus of opinion seems to take the view that they are derived from one or other of the cells of the blood or of the marrow: but whether they have any definite function, and, if so, what exactly it may be, remains in doubt.

Nearly allied to the blood plates is the *blood dust* or *hæmoconia*. This consists of minute, colourless, refractile bodies which show active Brownian movement. They resemble in appearance micrococci in the blood, and they have been thought to be granules escaped from some of the granular leucocytes. They have no relationship to the coagulability of the blood, and in this respect they differ from the blood plates.

(*To be continued.*)

GRADUATED LABOUR AT BELLEFIELD SANATORIUM.

By JAMES W. ALLAN, M.B., C.M.,
Resident Medical Officer.

THE employment of graduated labour as a means of promoting the recovery of consumptive patients, is a subject which has been attracting a good deal of attention of late, and I think it may not be out of place to put before the readers of the *Glasgow Medical Journal* a short account of what is being done in that way at Bellefield Sanatorium, Lanark.

Work for the patients is no new thing at Bellefield, but in the past year the work has been reduced to something of a system. My attention having been called by Dr. A. K. Chalmers, Medical Officer of Health, Glasgow, to the method in force at Frimley, where Dr. Paterson employs *graduated* labour as a means of inducing auto-inoculation in the patients, we this year inaugurated a scheme of graduated labour at Bellefield. Patients fit for work are divided into three grades—(A), those able for heavy labour; (B), those capable of medium labour; and (C), those only capable of light labour.

Under Section A (heavy work) is included cutting tree trunks into sections with cross-cut saw, wheeling and spreading ashes on footpaths, and the use of pick-axe and shovel, &c. Under Section B (medium work)—cutting up firewood, using Dutch hoe to clear away weeds, trimming borders, painting the chalets, &c. Under Section C (light work)—cleaning brasses, sweeping pavilion platform, and picking up papers and litter in neighbourhood: keeping workshops and tool-house in order: sharpening tools, &c. When a patient does



Photo. by]

[Mr. Thomas M. Hanlon.

FIG. 1.

The Old Pavilion—Bellefield.

well in Section C he is transferred to Section B, and if he does well in Section B, he is transferred to Section A.

In May of this year, in accordance with the intentions of the Council of Management, I visited the sanatorium at Frimley, Surrey, and also the Brompton Hospital for Consumption and Diseases of the Chest, London. (Frimley is the sanatorium in connection with Brompton Hospital). The results of these visits were embodied in a report which I submitted to the Council on my return. I need here only say that while I found many things in common between Bellefield and Frimley, there were also some differences. For

example, cases are, as a rule, kept under medical observation in Brompton Hospital before being sent to Frimley. Those cases which give promise of deriving benefit from the open-air treatment are then selected for the sanatorium. If any of the cases sent to Frimley break down, then they are sent back to Brompton Hospital.

Much of the work carried on at Frimley is similar to that carried on at Bellefield—such as sawing timber, digging, wheeling, &c. But the patients there are also employed in a form of labour which we have not as yet adopted, namely,



Photo. by]

[Mr. Thomas M. Hanton.

FIG. 2.

Painting the Chalets.

the carrying of loads in baskets—small baskets being used at first, and subsequently larger ones. But I may explain that they have cleanly stuff to work with, as the ground at Frimley is composed of a sort of gravel filled with flints. They also engage, to a certain extent, in French gardening.

At Frimley the opsonic index is regarded as a valuable guide in connection with the graduated labour. At Dr. Chalmers' suggestion we are sending specimens of blood, taken from patients engaged in work, to Dr. R. M. Buchanan,

City Bacteriologist, for the determination of the opsonic index. This has been done only to a limited extent so far, and I do not feel inclined to make any remarks on the results in the meantime.

Our patients are given to understand that they are expected to work, not merely by way of making themselves useful, but also as an important part of their treatment. The patients certainly derive benefit from the work, but it requires to be conducted with prudence.

It may be well here to explain that the work at Bellefield is



Photo. by]

[Mr. Thomas M. Hanton.

Fig. 3.

Cutting and Rolling Grass.

confined to five days in the week—Monday to Friday inclusive—and that it practically lasts for only an hour and a half. It may be doubted if this limited amount of labour is sufficient. Possibly the hours of work might be extended with advantage. At the same time I am convinced that it is wise and prudent to avoid all risk of overdoing the physical exertion. Of course, no patient is put on work unless there is good reason to believe that he is fit for it, and likely to derive benefit from it. The temperatures of the patients are taken four times a day, and a distinct

rise is taken as a contra-indication in the matter of work. In the Exercise Book a record is kept of the patients' maximum temperature on Sunday, which is, of course, a day of rest, and the maximum temperature during the working days of the week. On looking over these records one is struck with the fact that the maximum temperature during the working days keeps within the normal range as a rule: but there are some cases which reach 99° and over. In the latter case labour should be suspended. Naturally anything like distinct hæmoptysis should also be taken as a contra-indication for exertion. In this connection we had one case which illustrates the need for care and prudence. A patient who was on the working list was seized with an alarming hæmorrhage. Fortunately it occurred on a Saturday—which is not a working day. But supposing it had occurred on a working day! This case emphasises the need for care in putting consumptive patients to manual labour. And in my opinion it is never wise to insist on a patient working if he expresses a disinclination for it.

Pleurisy is another mischief which may be provoked by over-exertion, and which should be carefully guarded against.

In the accompanying table I have entered the results of the examination of sputum and blood from patients engaged in work at Bellefield, for which I am indebted to Dr. R. M. Buchanan. The number of cases presented is small, but the records are the best at my disposal in the meantime.

Besides manual labour the patients take exercise in the form of walking, the distance being increased as the patient gains strength and fitness. There are many charming walks in the neighbourhood of Bellefield, and the scenery about Lanark is varied, picturesque, and beautiful. At first the patients walk in the sanatorium grounds: then they are permitted to go down to the river Mouse at Leechford; and then along the Cleghorn road to the farm. Next they may go the length of Cleghorn Bridge, which is a bit further on, and they may return to Bellefield through the Cleghorn woods in the valley of the Mouse. This round—going by Cleghorn Bridge and returning by the woodland path—takes about an hour and three quarters. They also engage in croquet, and when the weather is bad they can amuse themselves with bagatelle and dart-throwing, or retire to the workshop, which seems a favourite place of resort. There is a library with a good assortment of interesting books to beguile the time at seasons of rest.

TABLE SHOWING RESULTS OF EXAMINATIONS OF SPUTUM AND BLOOD OF PATIENTS ENGAGED IN WORK AT BELLEFIELD.

Patient's Name.	Register Number.	Age.	Class of Work.	Sputum (T.B.)	Blood (Opsonic Index).
Francis S.	550	22	C	Negative.	0·6
			A	...	0·8
			A	...	0·6
James W.	554	25	B	+ (few)	0·8
			A	...	1·3
			A	+ (very few)	Film unsatisfactory.
Robert B.	556	20	C	Negative.	0·5
			C	+ (few)	1·5
			B	+ (few)	1·2
			A	+ (few)	1·05
John C.†	558	22	C	+ (large No.)	0·8
			C	+ (large No.)	0·9
			C	+ (many)	Insufficient blood.
			B	+ (few)	0·7
Alexander C.	559	21	C	+ (very few)	1·0
			C	+ (very few)	Insufficient blood.
			B	+ (very few)	1·4
			A	...	0·85
			A	...	0·6
Alex. J. M.K.	562	20	C	+ (few)	1·0
			C	+ (large No.)	Insufficient blood.
			B	+ (large No.)	0·8
			A	+ (few)	0·9
			A	+ (few)	Insufficient blood.
John M.A.	565	29	C	+ (many)	0·5
			C	+ (few)	Insufficient blood.
			B	+ (many)	1·2
			A	+ (few)	Film unsatisfactory.

* The examinations were made in the Glasgow Public Health Laboratory (C indicates light work; B, medium; A, heavy).

† This patient was put off work. "Numbness between shoulders and a dull feeling which comes over his head from the back, and fevered at night (99·2°)." Subsequently he worked two days.

In conclusion, I have only to say that I am satisfied of the value of moderate and graduated labour in suitable cases. It improves the appetite, tones the muscles, and improves the breathing. In the case of working men, it renders them more fit to return to their avocations. Four months of good feeding and absolute idleness in a sanatorium is conducive to the formation of fat and lazy habits. Besides the physical benefit, there is the psychical benefit derived from work. It puts the patients in a better frame of mind when they find that they are able to *do something*, and it raises their spirits, for they know that when they are put on work the medical officer is satisfied with their condition. But at the same time I am distinctly of opinion that the labour should be moderate in character, and that it should be voluntary on the part of the patient. No patient should be urged to work if he expresses a decided disinclination to do so. A contrary line of conduct may be attended with very awkward—very serious—consequences.

I have to thank Mr. Hanlon (a late patient) for the photographs which illustrate this paper.

Obituary.

JAMES THOMAS MOORE, M.D. GLASG.

WE regret to have to announce the death, which occurred on 7th ult., of Dr. J. T. Moore. Deceased, who was in his seventy-sixth year, retired from practice some five years ago. He and his brother, the late Dr. Samuel Johnstone Moore, as young men, came to Glasgow from the North of Ireland; and after teaching for sometime in Paisley, they proceeded to the study of medicine at the University of Glasgow. James graduated M.B., C.M., in 1869, and M.D. two years later. He commenced practice on the South Side, subsequently removing to Bath Street, and later to Buckingham Terrace, Hillhead.

He early became one of the better known practitioners in the city, and for many years previous to his retiral enjoyed a wide reputation, acquiring a large practice and possessing the love and respect of his patients.

Failing health caused him to retire from active work about five years ago, and latterly he was completely confined to bed. His wife predeceased him several years ago; he is survived by two sons and two daughters. One of the sons is a member of his father's profession, and is in practice in the city.

CURRENT TOPICS.

APPOINTMENTS.—Agnes Cameron, M.B., Ch.B.Glasg. (1904); Wm. Hendrie Kirk, M.B., Ch.B.Glasg. (1906); and Geoffrey B. Fleming, B.A., B.C.Camb. (1908), have been appointed Extra Physicians to the Dispensary of the Royal Hospital for Sick Children.

Jane Reid Shaw, M.B., Ch.B.Glasg. (1905), has been appointed Lady Medical Officer for the County Board of Stoke-on-Trent.

ROYAL INFIRMARY: PROPOSED AMENDMENT OF CHARTER.—The Royal Infirmary, as is generally known, is applying to the Privy Council for a supplementary charter, having for its object the amendment of the existing charter in various particulars, amongst others the constitution of the board.

The changes proposed are as follows:—(1) That the Professor of Medicine and the Professor of Anatomy of the College of Glasgow be no longer *ex-officio* members of the Board, and that the Faculty of the College no longer have the right to nominate one manager, but that two members be nominated by the Senatus from amongst the number of its own members, and two by the University Court, not necessarily from amongst the number of its own members; (2) that the Muirhead Trustees be entitled to nominate one manager from amongst their own body; (3) that the Members of Parliament for the several divisions of the City of Glasgow cease to be *ex-officio* managers of the Infirmary; (4) that the number of representatives to be annually nominated by the Corporation of the City of Glasgow be increased from one to three; (5) that as it is undesirable that any one religious denomination be represented on the Board, it is expedient that the right of the whole Established Church Ministers of Glasgow to elect one of their number as a manager of the

Infirmary be no longer exercisable; (6) that it would conduce to the good management and be for the benefit of the Infirmary if there were included amongst the managers two representatives of the Faculty of Procurators.

These changes if carried out will leave the Board with thirty-five members as at present.

THE WESTERN INFIRMARY: ANNUAL REPORT.—The following is a summary of the report submitted to the thirty-sixth annual general meeting of qualified contributors to the Western Infirmary of Glasgow on 24th November, 1910:—

Funds.—The following is a statement of the ordinary income and expenditure for the past year, as compared with the twelve months immediately preceding:—

	1908-1909.			1909-1910.		
Annual subscriptions (including £167, 17s. for Skin Department),	£6,872	11	2	£7,242	16	4
Donations for maintenance,	684	6	9	732	13	4
Country subscriptions—per hon. local treasurers,	1,261	3	2	1,338	9	2
Subscriptions from employees in public works, warehouses, offices, &c. (including £76, 15s. 2d. for Skin Department),	6,673	19	11	6,989	4	8
Church and Sabbath school collections,	2,113	16	0	1,968	1	7
Students' fees,	911	18	6	963	18	0
Interest on deposit receipts, loans, invested funds,	2,993	1	2	3,534	16	6
Sundry income—Refuse, &c.,	292	19	10	178	8	4
Ordinary income,	£21,803	16	6	22,948	7	11
Ordinary expenditure,	36,491	2	9	37,972	11	7
Showing a deficit of	£14,687	6	3	15,024	3	8

The abstract of extraordinary income and expenditure for the financial year is as follows:—

Extraordinary income for the year (legacies, donations, &c.),	£17,043	2	2
Extraordinary expenditure—			
Sundries,	£2,358	13	9
Transferred to maintenance,	15,024	3	8
Transferred to Lady Hozier Home,	691	19	7
	£18,074	17	0
Balance from stock,			1,031 14 10
	£18,074	17	0
£18,074	17	0	£18,074 17 0
Extension Fund—			
Balance from last year,	£18,818	17	9
Sums received during the year,	19,312	0	0
Interest,	649	6	9
	£38,780	4	6
Less paid for work in progress,	16,924	3	3
Balance,	£21,856	1	3

As will be seen from the foregoing statement, the ordinary income for the year was £22,948, 7s. 11d., while the ordinary expenditure amounted to £37,972, 11s. 7d., leaving a deficit of £15,024, 3s. 8d. As the balance at the credit of extraordinary income was not sufficient to meet the deficit, the managers had to trench on stock account to the extent of £1,031, 14s. 10d. to meet the expenditure of the year. There has been an increase on the ordinary income of £1,144, 11s. 5d., but there has also been an increase on the ordinary expenditure of £1,481, 8s. 10d., so that the deficit, as compared with last year, is increased by £336, 17s. 5d.

During the year there has been an average of about 400 patients waiting admission, and the managers have been pressing forward to completion the new south-west wing, which will place at the service of the community nearly 100 additional beds; but in view of the fact that each occupied bed costs about £70, and that the unrestricted fund at the credit of stock account is reduced to £23,557, 19s. 9d., the question of undertaking this new responsibility becomes a serious one.

As already indicated, the new wing referred to in last annual report will soon be ready for occupancy. The extension of the nurses' home is now completed. There is still required a central block to connect the main building with the western additions to the infirmary. This block will contain operating theatres, an admission and casualty department, lecture rooms, &c., and at least £35,000 more is required for this purpose. By the generosity of an anonymous donor, the sum of £3,500 has been promised to provide and equip an operating theatre on the first floor in this connecting block.

The clinical laboratory, mentioned in last year's report as provided by an anonymous donor, is now nearing completion, and will be in working order by the beginning of the year.

Patients.—The following table shows the number of patients treated from 1st November, 1909, till 31st October, 1910, also comparison with the previous year:—

IN-DOOR PATIENTS.

	1908-1909.	1909-1910.
In hospital on 31st October,	1908 - 566	1909 - 534
New cases admitted,	7,937	8,696
Total under treatment,	8,503	9,230
In hospital on 31st October,	1909 - 534	1910 - 553
Total treated to a termination,	7,969	8,677
	8,503	9,230

Of the in-door patients there were—

	1908-1909.	1909-1910.
Dismissed well,	4,526	5,494
„ greatly improved,	599	489
„ improved,	1,346	1,253
„ on other grounds,	934	844
Died in hospital,	564	597
In hospital at 31st October,	534	553
	<hr/> 8,503	<hr/> 9,230

OUT-DOOR PATIENTS.

	1908-1909.		1909-1910.	
	No. of Patients.	No. of Visits.	No. of Patients.	No. of Visits.
Treated in Dispensary—				
Medical cases,	13,655	32,139	12,550	31,530
Surgical cases,	9,111	49,058	9,506	61,723
Women for special diseases,	757	2,552	811	2,536
Diseases of the ear,	1,073	3,021	1,028	2,907
Diseases of the teeth,	704	704	654	654
Diseases of throat and nose,	2,904	9,425	3,530	10,396
Mental cases,	32	156	46	91
Vaccination,	729	1,235	617	978
Treated in Surgical Department				
Chiefly for accidents,	4,030	32,245	4,722	33,878
Treated in Electrical, X-ray, and				
Light Department,	2,887	13,831	3,208	12,312
Treated by massage,	117	2,552	133	2,428
Skin Diseases,	385	606	3,143	9,198
	<hr/> 36,384	<hr/> 147,524	<hr/> 39,948	<hr/> 168,631

Number of patients treated during the year—

	1908-1909.	1909-1910.
In-door,	8,503	9,230
Out-door,	36,384	39,948
Total,	<hr/> 44,887	<hr/> 49,178

The average daily number of patients in the hospital at one time was 524·05, as compared with 545·30 last year. The greatest number of patients in the hospital on one day was 585, and the smallest number 401. The average period of residence of each patient was 20·75 days, against 23·40 last year. This shows an increase of 727 in-door, and an increase of 3,564 out-door patients treated this year, as compared with the previous twelve months, and this increase is largely accounted for by the number of cases dealt with in-door in the special departments of gynæcology, skin, throat and nose, &c. The increase in the out-door department is almost entirely due to the transference of the dispensary work of

the Skin Hospital in Elmbank Street to the Western Infirmary. The number of deaths was 597, or 6·88 per cent of all the cases treated to a termination. Of the fatal cases, however, 178 were of such a hopeless character when brought to the hospital that the patients died within forty-eight hours after admission. Deducting this number, the death-rate is reduced to 4·93 per cent. Amongst the in-door patients treated, 2,205 were medical, 5,957 surgical, and 515 gynæcological; 1,938 were 12 years of age or under, and of these, 1,681 were surgical and 257 medical. There were 617 children vaccinated.

During the past year, 733 patients who received medical or surgical treatment at the Western Infirmary were conveyed to the Lady Hozier Convalescent Home, Lanark, and received the benefit of fourteen days' residence. The late Lord Newlands, donor of the home, gave a contribution of £10,000 in aid of its maintenance, but at least £30,000 more will be required to make it self-supporting. The income from all sources last year was £774, 7s. 1d., while the expenditure was £1,466, 6s. 8d., necessitating a transference of £691, 19s. 7d. from the funds of the Western Infirmary. As this is a burden upon the already too heavily taxed income of the infirmary, the managers appeal earnestly to the public, and especially to those works from which patients come, for some suitable financial acknowledgment of services rendered by the home.

DINNER AND PRESENTATION TO SIR HECTOR CAMERON.—On the evening of Monday, 5th December, 1910, Sir Hector Cameron was entertained to dinner in the Central Station Hotel by his former assistants and house surgeons, the occasion being his retiral from the Chair of Clinical Surgery in the University and from the staff of the Western Infirmary. The chair was occupied by Mr. A. Ernest Maylard, and Drs. Marshall (Rothsay), Nicoll, and Parry acted as croupiers.

Apologies and regrets for absence were received from the following, among others:—Drs. G. S. Middleton, Norman M. MacLehose (London), David Roxburgh (London), Robert Anderson (Birmingham), Arch. A. Warden (Paris), D. T. MacLeod (Southwold), J. Culross (Newton Abbot), W. Brodie Brodie (Thaxted), C. D. Temple (Comrie), and J. Stoddart Barr.

In proposing the toast of the evening, the chairman spoke of the admiration in which their guest had always been

held by those who, like themselves, had been in some way associated with him. As a teacher and a leader in surgery they honoured him; as a man, they loved and respected him; and they might justly say that everything he had said was worth listening to, and everything he had written was worth reading. Sir Hector was endowed with a wonderful memory, and they hoped he would long be spared to give to the profession, as he was still so capable of giving to the public, "valuable material from his carefully garnered store."

Sir Hector C. Cameron, in acknowledging the toast, made a reply at once interesting and felicitous. He had no idea, he said, when he accepted their kind invitation that he was to meet so large a proportion of the well-remembered faces, or that so many of his old house surgeons would have undertaken long and tiresome journeys in order to do him honour that evening. He had expected to see a small party, of a dozen or twenty, of men whom he was in the habit of frequently meeting in Glasgow and its neighbourhood. But he had miscalculated; and now, instead of finding it an easy task, as he had anticipated, to thank them for their kind and enthusiastic reception of him, and for the warm and most generous words in which their chairman had been good enough to speak of him, he found it a most difficult one. It was comparatively easy, perhaps, to express feelings of gratitude, even when those feelings were very deep and sincere; but this evening he was not only deeply grateful but deeply moved, and emotion inhibited speech. He felt inclined to borrow some such words as those of Orlando in the play—

"Can I not say I thank you? My better parts
Are all thrown down, and that which here stands up
Is . . . a mere lifeless block."

But he would ill requite their kindness, and do scant justice to his own feelings, if he did not endeavour to reply to them in some detail. It was not surprising that he should feel touched and moved, for, as he looked up and down the tables before him during dinner, he read in their faces that which recalled to him almost the whole period of his hospital service. Of course, all his old house surgeons were not present. Death had, as usual, taken its toll of them; many were in distant lands; and others, as they had heard earlier in the evening, were detained from joining them by various causes. He saw none of those present who served under him during the seven years when he was a surgeon to the

Royal Infirmary (1874-81), and this was not to be wondered at. Death naturally had removed more of them than of those who were with him later, and almost all the rest were scattered far and wide. One of them, their good friend, Dr. George Middleton, lived amongst them, and had been now for many years a physician to the Royal Infirmary, but he was prevented from being with them to-night, as he had hoped to be. He was the oldest of his house surgeons alive, having been with him in the summer of 1875. It was to Sir Hector an interesting fact that Dr. Wm. Sewell, who was his house surgeon when he resigned, in autumn, his position as surgeon at the Western Infirmary, was at the present time house physician with Dr. Middleton. The head and the tail of his long line of house surgeons had, in the fulness of time, thus met and made the circle complete. After some further remarks, Sir Hector referred to the earlier experiences of his life. He did not wish to weary them, he said, with tedious reminiscences; but he would tell them that he was the only man in that room who had been educated in the old College in the High Street. And what a change had happened since that time! At the period of which he spoke, the College was in the midst of the slums of the city, and the Professors' Court abutted on "The Vennel," from which it was separated only by the thickness of a stone wall. It was curious to reflect that there lived there in close contiguity the most degraded and wretched of human beings and some of the greatest intellects of the day—Lushington, Wm. Thomson (afterwards Lord Kelvin), Ramsay, Allen Thomson, &c. Though near, they were far as the poles asunder. He would also like to speak to them of his student days, and of his early professional life in the Royal Infirmary, where he was privileged to learn from his great master, Lister. He often thought that it was a good thing to have seen what surgery was in the pre-antiseptic days, when surgical wards stank, and when it was the practice to amputate sooner or later in almost every case of compound fracture. In the light of such experiences only could one realise the greatness of the revolution which Lister had effected, and the debt which the world owed to him. In conclusion, he wished again to thank them for their presence that night, and for the kind attention with which they had received his remarks.

Dr. Joshua Ferguson (Paisley), on behalf of the company, then presented the guest with a loving-cup, which bore the inscription "H. C. C., MAGISTRO CARISSIMO, DISCIPULI, MCMX."

After Sir Hector had accepted the cup, the proceedings terminated with the singing of "Auld Lang Syne."

The following old assistants and house surgeons were present:—

Assistants—A. Ernest Maylard, T. Kennedy Dalziel, Alfred A. Young, and G. H. Edington.

House surgeons (Western Infirmary)—John Middlemass Hunt (Liverpool), James W. Grange (Manchester), J. N. Marshall (Rothsay), Alfred Williams (Eccles), Henry Rutherford, James Parker (Kilmacolm), James H. Nicoll, James Adam (Hamilton), R. Barclay Ness, T. K. Monro, Thomas Forrest, John Gilmour (Dalmaur), George H. Edington, James Carslaw, Archibald G. Hay, Joshua Ferguson (Paisley), Farquhar Macrae, William S. Paterson, James Finlayson Fleming (Dunfermline), M. Logan Taylor, Robert Speirs Fullarton, W. B. Inglis Pollock, Hugh Miller (Hamilton), J. Goodwin Tomkinson, David Dickie, Thomas M. Dishington (Bridge of Weir), John Young (Bearsden), J. Mill Renton, J. R. C. Greenlees, Arnold H. Gray, R. S. Taylor, Walter H. Kiep, J. W. Mc'Nee, and W. A. Sewell; (Royal Hospital for Sick Children)—R. H. Parry, R. Barclay Ness, and James P. Boyd.

GLASGOW PUBLIC HEALTH: OLD-TIME ADMINISTRATION.—Dr. Hugh A. Mc'Lean, Glasgow, recently delivered a lecture to the members of the Old Glasgow Club on "A Review of the Public Health Administration in Glasgow." Mr. W. Mc'L. Jardine presided.

Dr. Mc'Lean quoted the opinions of early visitors to Glasgow, showing how they united in praising the natural beauty of the city and the salubrity of its atmosphere. He selected from the burgh records a series of extracts illustrative of the civic treatment of certain diseases and conditions. Beginning with plague or pest, he showed how in 1574 there were in operation protective measures of a very advanced nature. Dealing with the actual treatment of pest, the lecturer told how the primitive community had adopted, working empirically, measures which, in theory at least, were not improved upon to-day. These included compulsory notification of all sickness; house-to-house visitation, districts mapped out and quartermasters (sanitary inspectors) appointed to watch each district; compulsory removal of the rich and poor alike to the isolation camp on the town's moor, with the corollary of treatment and upkeep at the city's expense; the appointment

of a superintendent to manage the camp, and appointment of a councillor (in rotation) to visit the camp twice or thrice weekly; and the cleansing of infected houses and clothes, and removal in closed carts of infected filth. He dealt with leprosy and described the situation of the leper hospital (so-called) at the Gorbals end of the brig, and sketched the regulations imposed upon sufferers from this disease. Passing on to what might be termed "nuisances," he dealt with the treatment of "foulzie." Summing up this portion of the paper, he contrasted the health of the city in 1775 and in 1885. He showed that the general death-rate was 24·6 per 1,000 in 1885 (in 1909, 18 per 1,000) against 31·25 per 1,000 in 1775; and that while in 1885 the percentage of deaths from zymotic diseases was 16·21 as against 39·75 in 1775, the percentage of deaths from diseases of respiratory system had increased from 19·35 in 1775 to 35·21 in 1885, the great increase being due to the increased density of the population. Dr. McLean then sketched the rise and progress of the industrial development of the city, and showed how, in ever-increasing volume, the stream of human atoms drawn by the magnet of the city was pressing into Glasgow from north and south and east and west, and how this, in conjunction with the utter absence of a supply of water for domestic and other purposes, the filthy habits and the low moral conditions of the people, brought about the repeated epidemics of cholera and typhus fever. Reviewing the treatment of those two scourges, Dr. McLean showed how cholera disappeared when the city stopped using the sewage-polluted water of the river for domestic purposes and started to use Loch Katrine water, while for typhus there was no treatment in its proper sense, but only the panic treatment of each emergency as it arose. So long as the people were willing to tolerate filth plus gross overcrowding and density the first essential to satisfactory treatment was absent. Again, contrasting this state of affairs with the conditions prevailing in the city to-day, when on one or two occasions the weekly death-rate had touched the remarkably low figure of 12 per 1,000, the lecturer sketched the march of events which resulted in the formation of the elaborate organisation which was to-day popularly referred to as "The Sanitary." In conclusion he said that the nearer they approached to sanitary perfection, and all that term implied, the more secure did the foundation become on which they rested, morally, physically, socially, and nationally.

PREVENTION OF CONSUMPTION: WORK OF GLASGOW ASSOCIATION.—From a report by the Council of the Glasgow and District Branch of the National Association for Prevention of Consumption and other forms of Tuberculosis, we learn that the work of the past year was satisfactory and encouraging and indicated that interest in the prevention of consumption in the city and district was being well maintained, with the result that the progress to be recorded, even if slow, was steady. The delivering of lectures and addresses and the distribution of pamphlets, &c., were among the methods adopted to educate the public on the nature of consumption and the means to be taken to prevent its spread. Considering the prevalence of promiscuous spitting in public places, conveyances, and streets, it was gratifying to record that the combined action of the Corporation and some public companies had effected a great improvement. Referring to the dispensary which is accommodated in the Sanitary Chambers, Cochrane Street, the Council state that it continues to prove a valuable agency for the examination and selection of suitable cases for treatment in Bellefield Sanatorium, as well as for advising and treating those cases which are deemed of a more acute and advanced type and less susceptible to sanatorium treatment. During the year 136 cases were admitted to and 126 discharged from the sanatorium, making a total of 610 patients who have been treated since the opening of the institution in November, 1904. The results accomplished during the past year were of a most encouraging character when regard was had to the physical condition in which many of the patients were admitted. Of the 126 patients discharged, it was reported that 19 had the disease apparently arrested, 31 were much improved, 49 were improved, while 19 were not improved, 4 were dismissed, 1 left, and 3 died. With reference to the finances, the Council state that, as compared with the preceding year, the items of ordinary income do not appear quite so favourable, the amount received showing a reduction of almost £450, while the items on the expenditure side, including the working of the sanatorium, are, owing to the increased number of patients treated, in excess of the previous year's amount by nearly £300. While the Council believe that the decrease of income has arisen from special causes which may be regarded as temporary, the increased expenditure involved in the administration and management of the sanatorium in providing for the maintenance of 22 additional patients is not in that position, but will become a permanent annual expenditure. The means to be adopted in providing for the

annual increase, estimated at £1,500 to £2,000, has been under consideration, and the Council have resolved to institute a maintenance fund, in connection with which it will be necessary to appeal to the public for financial assistance. A report is also given of the work of the Ladies' Auxiliary for Bellefield Sanatorium. The record for the past year, it is stated, shows that, notwithstanding dull times and difficulties connected with collecting experienced by all charities, the sum raised by annual subscriptions has only slightly decreased, the total amount received under this heading being £898, 18s. 6d., only £26, 7s. 9d. less than was raised last year.

The report was brought before a large and influential company of ladies and gentlemen at a drawing-room meeting, convened by the Lord Provost and Mrs. McInnes Shaw, in the City Chambers, on 12th December, 1910, and after being adopted, a resolution, moved by Sir John Ure Primrose, that procedure be adopted forthwith for increasing the sanatorium maintenance fund, and remitting to the Council of the Glasgow and District Branch of the National Association to issue a public appeal and to adopt such means as they may consider best for that purpose, was carried unanimously.

TREATMENT OF INCURABLE CONSUMPTIVES: EXTENSION OF LANFINE HOME.—The new wing of Lanfine Home for Incurable Consumptives at Kirkintilloch was formally opened on Saturday, 3rd December, 1910, in presence of a large company of ladies and gentlemen. The new building stands within the grounds of Broomhill Home for Incurables, in conjunction with which it is conducted. The new wing owes its existence to the generosity of two anonymous donors, while a third donor has defrayed the cost of furnishing the additional wards. Formerly the home had accommodation for eighteen patients. Its total capacity has now been increased to forty-four beds.

The opening ceremony was performed by Lady Chisholm, president of the Ladies' Auxiliary. Dr. Yellowlees presided.

The Chairman, in his introductory remarks, referred to the death of Dr. Leonard Gow, who, he said, had been a pillar of Broomhill and Lanfine Homes since their inauguration. He traced the history of both institutions, pointing out that when Broomhill was opened as a home for incurables in 1876, the directors were compelled to decline admittance to incurable consumptives. At that time so rampant was consumption in Glasgow that if these patients had been admitted there would

have been no room for other incurables. In 1904, however, through the generosity of the late Miss Brown, of Lanfine, they were able to open a separate home for the treatment of incurable consumptives, and it had done good work, though its resources were very restricted. The number of applications for admission had been 277, of whom 110 were received. Fifty-five died, 15 went home to die, and 25 left more or less benefited, some so far recovered that they were able to return to light employment. He was astonished that in these latter cases so much progress had been made, as it was a condition of admittance that both lungs must be diseased. For years, however, the directors had been impressed with the inadequacy of the home. When the generous offer to extend it was made the directors hesitated before accepting, because the care of dying consumptives was so costly a matter. The endowment of the home was quite unequal, even with the help of subscriptions, to meet the expenditure, and every year there was a loss of £300, the total deficit amounting now to over £1,800. But, great as was the loss, the need for more accommodation was greater still, and the directors felt they had no right to refuse the offer made to them, notwithstanding the increased cost of maintenance with which they would be faced in future. With forty-four beds they would require to meet the yearly expenditure of a sum of £2,640, and the original endowment plus subscriptions amounted to about £840. Dr. Yellowlees hoped the public would realise, as the directors did, how great a boon the home was. It was an unspeakable relief to the sufferer to come there, often from a squalid or a crowded home, and equally a relief to his own friends; but perhaps its greatest claim to public sympathy and support was the important part it played in preventing the disease from spreading. Every dying consumptive was a focus of infection and a danger to the community. The disease would never be successfully fought until they isolated the old cases, so that new ones could not arise.

MONUMENT TO CLYDEBANK DOCTOR.—The monument to the memory of the late Dr. Stevenson, medical officer for the burgh of Clydebank, which has been erected in the playground of Clydebank Public School, facing Kilbowie Road, was unveiled on Saturday afternoon, 26th November, 1910, in the presence of a large gathering. The memorial, which is of grey granite, stands about 15 feet high. A massive base of square blocks supports a hexagonal column, surmounted by a cube, beautifully carved. The inscription on the monument

is as follows:—"Erected by friends in memory of James Stevenson, M.B., C.M., F.F.P.S.Glasg., D.P.H., medical officer of the burgh of Clydebank, 1889-1909, and of the parish of Old Kilpatrick, 1895-1909, and chairman of Old Kilpatrick School Board, 1900-1903." Mr. William Ford, chairman of the committee which raised the funds for the monument, presided, and the proceedings were opened with prayer by the Rev. Mr. Brownlee, St. James' Parish Church. Mr. Thomas Bell, Inandu, Dalmuir, who was to have performed the unveiling ceremony, was unavoidably absent, and his place was taken by Mrs. Buchanan-Blake. In giving over the monument to the custody of the School Board for all time, the Rev. Colin M. Nicol, Union United Free Church, paid a high tribute to the memory of Dr. Stevenson. Mr. Alexander Aitken, chairman of the School Board, formally accepted the monument on behalf of the Board.

SMOLLETT AND CORROSIVE SUBLIMATE.—In view of the great interest manifested at present in "606," spirochaetes, and the Wassermann reaction, we feel it is not necessary to offer an apology for drawing attention to this most human aspect of one of the world's immortals. The subjoined letter is taken from the *Life of T. Smollett, M.D.*, by his friend, Dr. John Moore, who for many years practised in Glasgow, residing at first in Donald's Land, Trongate, and later on in Dunlop Street. His son, Sir John, the hero of Corunna, was born in the Trongate house.

DEAR MOORE,—I have been for some weeks resolved to write you an account of my health, about which I know your friendly solicitude. . . . You must remember the miserable way in which I was at parting from you in August last; at my return to Bath I caught a cold, in consequence of which my rheumatic pains retired, and the disorder in my breast recurred, namely, an orthopnea, with an ugly cough and spitting, exclusive of a slow fever, from which I had never been free. But these symptoms gave me little disturbance in comparison with the ulcer on my fore-arm, which continued to spread until it occupied the whole space from about three inches above the wrist to the ball of the thumb, so that I was entirely deprived of the use of my right hand, and the inflammation and pain daily increased. In the beginning of November it was supposed to be cancerous; at that period I could not sleep without an opiate, my fever being continual; my appetite failed, and the rheumatism again invaded me from the neck to the heel. In a word, I despaired of ever seeing the end of winter, and every night when I went to bed fervently wished that I might be dead before morning. In this

comfortable situation I consulted with Messrs. Middleton and Sharp, the two most eminent surgeons in England, who were then, and are still, at Bath. I had my hand dressed before them, and proposed a course for the cure, which they approved. I forthwith began to dress the sore with double mercurial ointment made without turpentine. I took a dose of Van Sweeten's¹ solution of corrosive sublimate every morning, and drank a quart of strong decoction sarsæ² every day. On the second day of this regimen the matter was much mended, and the pain considerably abated. In one week I was quite free of the fever and rheumatism, and my appetite returned in full perfection. In ten days I left off taking the sublimate, for by this time the ulcer was almost closed, and in another week skinned over. It continues still hard and scaly, but the cicatrix seems quite firm, and I can now use my hand almost as well as ever. I still drink the decoction, and never stirred out of my house till yesterday, when I ventured out in a chair and got a cursed cold, which I find will produce an ugly fit of the asthma; this, however, I will bear without repining. In a word, my cure is looked upon as something supernatural, and I must own that I now find myself better in health and spirits than I have been at any time these seven years. Had I been as well in summer I should have exquisitely enjoyed my expedition to Scotland, which was productive of nothing to me but misery and disgust. Between friends, I am now convinced that my brain was in some measure affected, for I had a kind of *coma vigil* upon me from April to November without intermission. In consideration of these circumstances I know you will forgive all my peevishness and discontent, and tell good Mrs. Moore, to whom I present my most cordial respects, that with regard to me she has as yet seen nothing but the wrong side of the tapestry. Pray remember me kindly to your brother-in-law, Mr.

¹ Van Swieten (not Sweeten, as Smollett has it), a Dutch baron, about 1743 brought forward his *specificum ab ipsomet invento*, and, by avoiding salivation, did much to repopularise the use of mercury, which had been in and out of fashion with the physicians of Europe several times during the three preceding centuries. Van Swieten's solution is a solution of corrosive sublimate in spiritus frumenti rectificatus (one half grain to the ounce), and the dose for adults is one, or, at the most, two spoonfuls night and morning; so it is identical in strength and dosage with the liquor hydrargyri perchloridi of the *British Pharmacopœia*. The composition given above is found in *hac novissima editione* (1768) of Astruc's *De Morbis Venereis*, vol. ii, p. 463. This particular edition of this work is issued from the Neapolitan Press, in which fact those who believe that "the plague of Naples" was in reality, or in the main, syphilis will see a peculiar appropriateness. At one time the designation of syphilis as the "Neapolitan disease" was current throughout Europe. Thus Thersites, in "Troilus and Cressida" (ii, 3), speaks of the "Neapolitan bone-ache," evidently meaning the osteocopic pains of syphilis; and the clown in "Othello" (iii, 1) expresses his disapprobation of Cassio's musicians by asking them, "Why, masters, have your instruments been in Naples that they speak i' the nose thus?"

² Sarsaparilla was first lauded by Thomas Rangonus in his work on the *Malum Gallicum*, published at Venice in 1538.

Simson, Drs. Stevenson and Douglas, to honest Robin Urie, and all my Glasgow friends. Write to me with your first convenience, directing to Dr. Smollett, Gay Street, Bath, and believe me, with the warmest affection and esteem,—Dear Moore, Your much obliged humble servant,

T. SMOLLETT.

BATH, Febr. 8, 1767.

SPIROCHÆTES ("Nihil sub sole novum," Eccles. i, 9).—In these days of awful exactitude, when there is such a demand for hard dry facts, there is, in certain quarters, a tendency to think that imagination has no place in the make-up of a modern physician, surgeon, or pathologist. But that this is a long way from the truth is shown by the fact that all our really great scientists, medical and others, have been richly endowed with the dreaming, poetic, imaginative temperament; no doubt these seers kept themselves chastened by constant contact with the sober realities, but it proceeds from the very nature of things that facts must often lag far behind. Did not Mr. Joseph Lister inaugurate his antiseptic system long before he had seen a pyogenic coccus or bacillus?

The ancient men of medicine, in being untrammelled by discoveries, enjoyed a free soaring existence to which we are altogether strangers. They gave free reins to their imaginations, whereas we ride them forever on the curb. And, needless to say, this unbridled licence was most disastrous, for, though many entered for the Great Truth Handicap, the starters were few; and of these nearly all were bolters, that were off the course almost as soon as the flag fell: still every now and then it did happen that a Pegasus ran straight, from start to finish, and passed the winning post—flying. Since, therefore, every bull's eye, to change our metaphor, was scored at the expense of a perfect arsenal of powder and shot, it behoves us to make much, not only of an "inner," but even of an "outer."

So recently as 1905 was the spirochæte of syphilis demonstrated for the first time to the casual eye of all, but for centuries previously it had been clearly visible to the spiritual sight of the elect few. A Dutchman, Etienne Blankard, writing in 1684, declares—"But, outside of our speaking of an acid, we could advance another cause, of which no one, so far as I know, has thought; to wit, that in the seed of men and moist matter which women carry in their wombs and in their sheaths are found *small animals*, which, being venomous, corrupt not only our genital parts, but even,

growing in time to large quantities, thrust themselves everywhere *in our blood*, which they corrupt."

Martin Lister, subsequently one of Queen Anne's household physicians, in 1694 accepts the American source of syphilis, and explains its causation as follows:—"It is more reasonable to believe that the venereal disease recognises for its origin the circumstance that human beings ate the flesh of the *ivana*, or *iguana*; this animal is a serpent of the family of quadrupeds, and of which the Indians are very fond." Ballay, in 1762, goes one better than Lister, "for he gives the means of finding the germ of the syphilis inclosed, according to him, in the iguana. 'If the lizard *ivana*, or *iguana*, of Fernandes and of Lister were to be placed in an infusion, and a drop of this infusion were examined with a solar microscope, there might, perhaps, be seen that species of *small animal* which we call *venereal virus*.'" Ballay adds a reflection, truly marvellous for his time:—"We could also add, in favour of the *system of worms*, that mercury would not have the virtue of curing the pox were it not kept up by small animals; for mercury is, in truth, the poison of all small animals; I mean, of all insects." "Thirty years before Ballay, two French physicians, Deidier, and especially Desault, had defended the same theory. 'We judge that the venereal leaven consists of *imperceptible worms*. . . . This idea of *pox worms*'" (some readers may, like the gravedigger in "Hamlet," prefer the adjective "pocky"), "although they do not come under the cognizance of the senses, will not appear so outlandish if one but reflect that modern philosophers believe that lice, fleas, and crab-lice have other insects on the surface of their body, which are as annoying to them as they are to us, and which are so small, in regard to their size, as they are thin and slender in regard to ours.'" ¹ We rather fancy that some of those who had the great privilege of witnessing Dr. Levaditi's marvellous cinematographic demonstration will not be disinclined to regard the term *pox worm*, or *ver vérolique*, in every way as good, if not better, than the high-sounding title of *spirochaete pallida*.

¹ The extracts quoted are from Buret's *Syphilis in the Middle Ages and in Modern Times*, as translated by Ohmann-Dumesnil (1895), pp. 161-164.

NEW PREPARATIONS, &c.

From Messrs. The Regulin Syndicate, Limited.

Regulin—This consists of brownish dry scales, and is said to be agar-agar impregnated with a small quantity of aqueous cascara extract, previously freed from its bitter ingredients. It is proposed for use as a mild laxative; the agar-agar softens the fæces, and the cascara acts as a mild stimulant to the bowel. The preparation has almost no taste, and conforms to the physical tests for agar-agar. It may be given incorporated with any suitable soft, moist food several times a day in doses of from a teaspoonful to a tablespoonful.

MEETINGS OF SOCIETIES.

PARTICK AND DISTRICT MEDICAL SOCIETY.

THE first general meeting of the Society was held in the Burgh Hall, Partick, on 13th October, 1910, Dr. Snodgrass in the chair.

An interesting discussion took place on "The Compulsory Notification of Phthisis."

Dr. Watt, Medical Officer of Health for the Burgh, introduced the subject. For two years now, voluntary notification had been in force in Partick; it had proved an utter failure. In 1909 the deaths from phthisis were 78; only 10 of these were notified before death and 13 shortly after. In the first six months of 1910, there were 41 deaths, 29 of which were not notified at all. Accurate statistics of so fatal a disease were urgently required. These would be obtained by compulsory notification. The detection of early cases was also important, and would follow as a result of keeping the infected families under observation. He suggested that a great deal could be done by examining the members of infected families with x-rays and tuberculin. Fifty-six local authorities in this country had adopted compulsory notification, representing a large proportion of the population of the country. Experience had shown that it involved no inconvenience to the general practitioner, as a clause in the Act permitted cases to be left in the care of the private practitioner, if desirable. Dr. Watt regretted that he was not prepared

to recommend any particular method of treatment of the notified cases.

Dr. James Scott carried on the discussion by a series of interesting notes from his experience in Bellefield and Glasgow Corporation Dispensaries. In Glasgow, also, voluntary notification had failed. While it was in force, only 209 cases were notified, all in poor-law practice; there were no private notifications. Under compulsory notification, 2,860 cases were notified, 1,101 of which were private. In Glasgow no fee was paid under the voluntary notification scheme. *Dr. Scott* described the Glasgow system of dealing with notified cases by means of out-door dispensaries. He strongly urged the necessity of isolation of advanced cases. In Edinburgh there were beds in the fever hospitals reserved for such cases. In this country, however, there was no compulsion on a patient to remain in hospital. New York authorities had obtained powers to detain dangerous cases. *Dr. Scott* dealt also with the question of duplicate notifications. In Glasgow, out of 1,219 notifications, 118 were duplicate; and in another series, out of 2,250, 491 were duplicate. The fees for these were always paid in the case of private practitioners and dispensary doctors, but to poor-law medical officers each case was only paid for once. This was rendered necessary by the large number of "ins and outs."

During the further discussion, *Dr. Gracie* urged the necessity of the after-care of sanatorium patients, and *Dr. Caskie* objected to compulsory notification, on the ground of the stigma it would put upon the patient.

The *Chairman*, in his closing remarks, pointed out that compulsory notification would relieve the responsibility of the private practitioner, and would enable authorities to deal with infected houses.

SCOTTISH OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

THE first meeting was held on 11th November, 1910, at the Royal Infirmary, Edinburgh, under the chairmanship of *Dr. Logan Turner*.

DR. W. G. PORTER showed a patient two and a half years after operation on the right labyrinth. Granulations were removed from the region of the horizontal canal, but the

remaining canals and the cochlea were not interfered with. The vertigo has disappeared and the patient can follow his employment, but complains of severe tinnitus. It was a question for discussion whether any further surgical treatment should be carried out.

Drs. Kerr Love and *Thomas Barr* advised against this, and *Dr. Farquharson* suggested the use of the high frequency current and injections of fibrolysis.

Dr. Porter also reported the case of a patient with nystagmus of the right vocal cord and soft palate. The movement of the cord consisted of a rapid adduction and a slower abduction, and the rate was about 150 a minute. It was thought that the phenomenon was due to bilateral cerebral disease, probably associated with arterio-sclerosis. The patient died suddenly, but no *post-mortem* examination was obtained.

DR. J. D. LITHGOW read notes of a case of double frontal sinus disease with cerebral involvement. There was a deficiency of the cerebral wall of the right sinus, and through this a fungating mass of necrotic cerebral tissue presented. Operation resulted in recovery.

DR. J. S. FRASER reported a somewhat similar case, which, however, ended fatally. In this patient the frontal sinus suppuration was complicated by extra- and intra-dural abscesses in the frontal region.

Dr. Syme, in the discussion, remarked on the increasing frequency with which reports of intracranial complications of frontal sinus disease were being published, and pointed out that in reference to the question of operation on the sinus this danger must be taken into account.

Dr. Turner stated that, besides these two cases, one other, making three within the year, had occurred in the Edinburgh Royal Infirmary, and he drew attention to the statistics of Gerber, who has collected 150 cases of intracranial disease following suppuration in one or other of the nasal accessory cavities.

Dr. Fraser also read notes of a case of purulent labyrinthitis, with death from leptomeningitis. The meningitis was probably present on admission. The labyrinth was opened by

double vestibulotomy. A lantern demonstration of the internal ear was given. This showed the condition after operation. The vestibule was efficiently drained, but pus was present in all the coils of the cochlea, especially in the scala tympani, in the ductus endolymphaticus, and in the ductus perilymphaticus. The inflammatory process could also be traced to the internal auditory meatus from the scalæ of the cochlea along the branches of the cochlear nerve.

An interesting discussion took place, in which *Drs. T. Barr, Kerr Love, and Albert Gray* took part, as to the indications for opening the internal ear spaces, the general opinion being that there is a tendency at present to too hasty interference with the labyrinth in aural suppuration.

Dr. Fraser also showed a patient on whom Killian's operation had been performed for unilateral frontal sinus disease.

DR. MALCOLM FARQUHARSON showed—

1. A patient presenting symptoms of cerebro-spinal rhinorrhœa. The condition followed a severe fall on the back of the head. There is a clear watery discharge from the right nostril presenting the characteristics and conforming to the tests of cerebro-spinal fluid. The patient suffered from severe headaches before the nasal discharge commenced. There is now complete double optic atrophy, and on the right side there is deafness of nerve type. The nasal passages are narrow, but otherwise appear healthy.

In the discussion, *Dr. Turner* suggested the presence of an intracranial tumour, and recommended that the patient should be examined by a neurologist, and *Dr. Syme* advised the performance of spinal puncture.

2. A young woman who has attacks of angio-neurotic paralysis of the right acoustic nerve. She is suddenly attacked with vertigo, deafness, and severe tinnitus, accompanied by pallor of the face and nausea. Complete recovery results in a few minutes. On examination the ear is normal. Under treatment by x-rays and current to the sympathetic in the neck, with injections of 1 in 1,000 adrenalin, the attacks have become less in frequency and severity.

3. A patient on whom Rouge's operation had been performed to permit of the treatment of extensive lupus of the nasal cavity.

4. A man with a large epitheliomatous growth of the pharynx in whom treatment by x-rays and radium had been followed by retardation and diminution of the growth, with relief of pain, but with later rapid extension.

5. A patient with a large choanal polypus on the left side. By posterior rhinoscopy its attachment to the posterior part of the middle meatus could be seen.

Dr. Brown Kelly offered some observations on the relation of these polypi to the antral cavity.

6. A patient with a papilloma attached to the anterior third of the left vocal cord.

7. A man with congenital malformation of the larynx. The left arytenoid prominence was much smaller than the right, probably from an absence of the accessory cartilages. The patient came to the hospital for some trouble unconnected with the larynx: and the movements of the cord and the voice are normal.

DR. LOGAN TURNER showed—

1. A female with a large swelling in the floor of the left nostril just inside the ala. The swelling was tense and was covered by skin, and was freely movable. The diagnosis was that it was a retention-cyst of one of the mucous glands in this neighbourhood.

Drs. Brown Kelly, Fullerton, and Fraser agreed with this, and the first referred to a number of similar cases which he had seen, and remarked on the much greater frequency with which, in his experience, they occurred in females than in males.

2. A case of laryngeal tuberculosis in which an 85 per cent solution of alcohol had been injected into the right superior laryngeal nerve for the relief of dysphagia. The patient had had two injections at an interval of three weeks, with relief of the pain, especially since the latter injection. Unfortunately the disease has extended to the left side, so that the relief is only partial.

Dr. Peterkin made some observations on this method of treatment.

3. Two cases of acute leptomeningitis complicating chronic

middle-ear suppuration. Recovery. One, a male aged 16, had left middle-ear suppuration for years. A week before admission he was seized with acute symptoms—vomiting, headache, vertigo, and elevation of temperature. Lumbar puncture showed the cerebro-spinal fluid under pressure, slightly turbid, with excess of albumen. Radical mastoid operation; no evidence of inner-ear disease. Two days later, neck rigidity, double Kernig, severe headache, high temperature, no optic neuritis. A second lumbar puncture was done, and from the fluid withdrawn streptococcus pyogenes, bacillus proteus, and a gram plus anaërobe were grown, and the same organisms were found in the discharge from the mastoid. Antistreptococcic serum was injected into the spinal canal on two occasions, and subcutaneously on five, and spinal puncture was frequently performed. At the end of three weeks all the symptoms had disappeared. The second case, a male aged 29, was somewhat similar, except that in him in the left, the diseased ear, there was evidence of vestibular impairment, the caloric reaction being negative, and there was spontaneous nystagmus towards the healthy side. The cochlear nerve remained active. Symptoms of meningitis showed themselves, but there was no optic neuritis. Lumbar puncture showed fluid under pressure and turbid, containing polymorphs, lymphocytes, and degenerated epithelial cells. Radical mastoid operation. Cholesteatoma evacuated. Openings were found in the external semicircular canal, and in the oval window, discharging dirty fluid. Drainage was established. A second lumbar puncture showed gram plus and gram negative bacilli and gram plus cocci. The mastoid and inner-ear secretion showed streptococcus pyogenes and a diphtheroid bacillus. Lumbar puncture was performed on several occasions, and antistreptococcic serum was injected into the spinal canal and subcutaneously. Gradual improvement and ultimate recovery resulted.

Drs. Stoddart Barr and Syme discussed these two cases.

REVIEWS.

Gynaecological Therapeutics. By S. JERVOIS AARONS, M.D.,
M.R.C.P. London: Baillière, Tindall & Cox. 1910.

THE author, in his preface to this small volume, draws attention to the predominance of the surgical aspect of gynaecological treatment in modern text-books, and he brings forward this publication as a plea for the trial of therapeutic agents before resorting to operations. The book is intended for the general practitioner, and the aim of the author has been accomplished, viz., that the book should be simple and clear in its directions. It is concise, and gives practical and useful information on the treatment of gynaecological affections—treatment which has been found suitable and efficacious in the hands of the author himself. The contents of the book are arranged according to the diseases and functional disorders which affect the different pelvic organs. Several chapters are set apart for the description of the use of pessaries and tampons, and useful directions are given for the treatment of menopausal conditions. The use of gelatine-coated tampons is advocated, but mention is made of their expense—a factor which requires consideration in hospital practice. Much stress is laid upon the benefit to be derived from the use of medicated douches, and practical suggestions, with illustrations by means of diagrams, are given for the protection of the bedclothes by a special method of using a rolled towel and jaconet sheet whilst douching. Although the use of sitz-baths is frequently mentioned, we should have liked to see more prominence given to this method of applying heat to the pelvic organs, more especially in cases of acute infective diseases of the genital tract, where the use of the douche may entail a degree of risk to the patient unless practised by a skilled attendant. For the treatment of pruritus vulvæ many valuable prescriptions are given, their multiplicity showing the absence of any specific drug for the affection. We would suggest that picric acid solution, which was found of benefit when painted over the affected areas, should be added to the list. In the medication of uterine inflammatory conditions, we would draw special attention to

the description of the intra-uterine probe and mop, and also to the capsule of ichthyol and gelatine, both of which were devised by the author.

For the treatment of inversion of the uterus by means of repositors or bags, no mention is made of the necessity for counter-pressure over the abdomen.

Inoperable cancer of the uterus is treated by the application of acetone to the affected parts, but the author has not seen the necessity for indicating that vaseline is to be smeared over the vulva before applying the irritant. We should like to draw special attention to the chapters on the treatment of diseases of the urethra and bladder, and also to those dealing with disorders of menstruation. Many valuable remedies are given for the relief of these affections. We could have wished for a larger chapter on vaccines and sera, and we hope, when a later edition of this volume appears, that more advance will have been made in this branch of gynæcological therapeutics. In the chapter on hygiene, we agree with the author in his remarks upon the necessity for the proper care of the teeth, and also for the absence of risk in the practice of bathing and the taking of exercise during menstruation. The only stipulation in the latter advice is that there is no dysmenorrhœa or menorrhagia complained of.

We congratulate Dr. Aarons on the production of a useful and thoroughly practical little volume.

Gynæcology for Nurses and Gynæcological Nursing. By COMYNS BERKELEY, B.A., M.B., B.C., F.R.C.P.Lond., M.R.C.S. Eng. London: The Scientific Press, Limited. 1910.

THERE is such a large proportion of the midwifery practice of this country performed by midwives that it is no wonder so many books have been published to meet their wants. It is otherwise with gynæcology; gynæcological nursing is only part of a nurse's general surgical training, and such nurses are only called upon to carry out the surgeon's instructions, not to diagnose and treat cases.

In this small book the subject of gynæcology is condensed into 78 pages. *Cui bono?* Only 36 pages are devoted to gynæcological nursing—the only portion of real use to nurses, and one which might have been extended with advantage. In any case, these lectures only reflect the practice in Middlesex and Chelsea Hospitals, the preface informing us

they were delivered to the nurses in these two institutions. In Scotland it is not considered necessary to give the patient a carbolic bath in the afternoon before the operation.

Difficult Labour. By G. ERNEST HERMAN, M.B. Lond., F.R.C.P., F.R.C.S. New and Revised Edition. London: Cassell & Co., Limited. 1910.

THIS new edition (the fifth) has been thoroughly revised, new illustrations have been inserted, and chapters on retroversion of the gravid uterus and eclampsia have been added.

We cordially agree with much that is in the book, but there are some statements which we cannot accept. For instance, in summing up the principles of treatment in cases of flat pelvis, the author says, "If the head is so large that it plainly cannot enter the brim, perforate at once." Why should the child be ruthlessly sacrificed when by the performance of Caesarean section, or one of the operations to enlarge the pelvis, its life can be saved with little or no more risk to the mother than she would run from craniotomy?

In the treatment of placenta prævia, plugging of the vagina is condemned as useless. We entirely disagree with this. A properly inserted plug will effectually check the bleeding while dilation is taking place, but, of course, the plug must be inserted properly. The same statement is made in reference to plugging in the treatment of accidental hæmorrhage. In dealing with the treatment of *post-partum* hæmorrhage the author says, "A new treatment has lately come from Germany, namely, plugging the uterus with iodoform gauze." We do not know what "lately" may mean, but we can assure the author that this method of treatment has been in use north of the Tweed for a good many years. In severe cases it is a most useful method of treatment, and we have not found it dangerous. We agree that perchloride of iron should not be injected into the uterus.

In the chapter on retroversion of the gravid uterus, we find the following reference to pelvic adhesions as a cause:—"I have never seen a case, or read of one, in which there was evidence that adhesions existed." "This is a theory without foundation, invented to justify abdominal section." We can assure the author we have seen a case of this kind, and have read records of others. In our case abdominal section was not necessary.

The chapter on eclampsia does not throw any new light on the subject. In dealing with the causes of death no mention is made of complete suppression of urine. In reference to the number of fits which may occur, he says, "As many as 160 have been counted." Jardine has reported a case which recovered after the occurrence of over 200 fits. The treatment advocated is with morphia, and "the great thing is to give enough." While we do not agree with this wholesale use of morphia, we are at one with the author in his advice—"Let labour go on naturally. Interfere only if some condition is present which would demand interference in a patient not suffering from eclampsia." We also agree with his condemnation of Cæsarean section in such cases, unless there is some other reason for its performance.

Although there are a number of statements in the book which, from our experience, we cannot accept, yet, on the whole, the book is an extremely good one, and we have pleasure in recommending it.

Infectious Diseases: A Practical Text-Book. By CLAUDE BUCHANAN KER, M.D.Ed., F.R.C.P.Ed. London: Henry Frowde and Hodder & Stoughton. 1909.

THE author has made it his special effort in this book to give a clinical account of the eruptive and continued fevers of this country. He has limited his descriptions to those fevers of which he has great personal experience. While he has not neglected the large literature of the subject he has thoroughly assimilated it and written his descriptions largely in the light of his own knowledge and observation. The result is a book of distinct value, and one which will certainly be of great use not only to young practitioners, but also those who have had considerable experience in treating the infectious fevers. The plates are a special feature of the book. Some of these are plain, but a number are in colour, and are taken as direct colour photographs. The final tints of these are not completely successful, but there can be no doubt that some, those of scarlet fever especially, give a better idea of the eruption than any plates hitherto published. One of them, showing the blotchy scarlet fever rash, should prove specially valuable.

A large number of charts illustrating all the forms of the fevers are also given, and of these most types seem to be represented.

Dr. Ker has not treated the bacteriology or the pathology of the diseases to any extent. When the second edition of his book is called for he might with advantage at least consider the former more fully, as the tendency of the present day is too much to divorce bacteriology from clinical medicine, and a criticism of the bacteriologist's findings from the point of view of a clinical physician of long experience would be distinctly valuable.

The Cell as the Unit of Life, and other Lectures: An Introduction to Biology. By the late ALLAN MACFADYEN, M.D., B.Sc. Edited by R. TANNER HEWLETT, M.D., F.R.C.P., D.P.H. London: J. & A. Churchill. 1908.

THESE lectures are extremely well edited, and deserve careful and wide perusal. The study of medicine implies a knowledge of the principles of biology, and an important principle in biology is the determination of what is the true unit of life. The cell, or nucleated corpuscle, is regarded as the true unit, and forms the basis of biological reasoning. Before the microscope was discovered the multicellular aggregate, the individual, was all but universally regarded as the unit of life. The writings of the few who to their credit saw, though generally vaguely, that the true unit of life was particulate in the individual, did not materially affect the early teaching of biology, and these writings were regarded as mystical. Schleiden and Schwann established the modern doctrine, that the cell is the unit of life, on a broad and substantial basis. As many of the conclusions arrived at from this doctrine are totally different from those of the older biology, which looked on the multicellular individual as the unit, they have obtained acceptance or denial in a certain manner in accord with the nature of the recipient's mind. And many of the almost obvious inferences from this doctrine are altogether denied, or at best considered pure mysticism. This doctrine, however, is *juvile princeps* the most essential to a rational "Introduction to Biology." But a formal or standard text-book on general biology is unfortunately still wanting. Biology implies a knowledge of the answer to the question, "What is life?" It is usual to distinguish animate beings from things inanimate. Is the distinction scientific? Or is it merely convenient, as we use the terms *up* and *down* in regard to space? If we believe the universe can be divided into animate and inanimate we accept a form of dualism which no philosopher has ever seriously tried to substantiate. There are those

who believe, and they are surprisingly numerous, that life is a cunningly contrived physico-chemical phenomenon, and they hope one of these days to put together synthetically a living being. There are others, though at present few, who think that life is really an attribute of all things, that every unit properly so-called, be it cell, multicellular individual, species, or other organic group, solar or sidereal system, in fact, any unit large or small, is a living or genetico-organic being. On this subject Dr. Macfadyen expresses himself thus: "We must seek to explain the manifestations of Life on the mechanical principles of chemistry and physics. In saying this there is no intention to suggest that we would thereby satisfactorily explain what ultimately *Life* in itself was, or, in contradistinction to the Vitalistic Theory, explain the cause as well as the effect on a materialistic basis. The mechanical is, however, for scientific observers, the one safe and sound working hypothesis." Dr. Macfadyen then proceeds to explain and enumerate the essential characteristics common to all cells, plant, or animal. Firstly, the physico-chemical structure and composition on which all the vital functions rest. These latter are, assimilation, disassimilation, manifested in nutrition, respiration, growth and decay, motion and sensation or response to external stimuli; and, finally, the power of reproduction, which is the genetic character common to all living beings whereby they persist through time. The special functions of cells form the subject matter of the rest of the volume, and such phenomena as pertain to cell activity, fermentation, immunity, toxins and antitoxins, hygiene and disease, are carefully and ably discussed.

Transactions of the American Laryngological Association.
New York: Published by the Association. 1908, 1909.

THE volume for 1908 opens with an interesting address by the President, Dr. Herbert S. Birkett, of Montreal, entitled "A brief account of the history of medicine in the Province of Quebec from 1535 to 1838." Dr. J. Gordon Wilson, of Chicago, formerly in practice in Glasgow, details the results of his examination of skulls as to the variations in the ostium frontale. He states that the cribriform plate is the part most likely to be injured during intranasal operations on the frontal sinus, and mentions the factors which render accidents more or less likely to occur. A valuable series of papers deals with recurrent and abductor paralysis of the larynx.

In the *Transactions* for 1909, special mention may be made of a paper by Dr. J. M. Ingersoll on "The nose and naso-pharynx in infants and young children." Attention is drawn to the fact that hypertrophied adenoid tissue, besides blocking the naso-pharynx, may cause more or less obstruction of the larynx owing to the high position of the latter. The disturbance thus produced is probably one of the chief factors in the causation of croup and other affections of the larynx in children with adenoids. As a result of his investigations, he states that a curette, with a straight handle and blade at 55°, is best adapted to follow the posterior wall of the naso-pharynx and remove adenoids in infants. Drs. Cobb and Nagle deal with the bacteriology of the nose. They conclude that the normal nose is sterile, and believe that the results on which they base their opinions were obtained in consequence of the thorough sterilisation of the vestibules, which ordinarily teem with micro-organisms. Dr. Casselberry describes an ingenious and simple method of packing the nose. A "club-finger cot" (the finger of a surgeon's rubber glove will serve the purpose) is introduced and firmly filled with gauze by means of a packer. Several interesting papers on the surgery of the œsophagus conclude the volume.

Die Therapeutischen Leistungen des Jahres, 1907. XIX Jahrgang. By ARNOLD POLLOTSCHKE and HENRICH NÁDOR. Wiesbaden: J. F. Bergmann. 1908. (Glasgow: F. Bauermeister).

IN this yearly summary of contributions to therapeutics, the subject matter is arranged under alphabetical headings, beginning with Aderlass (blood-letting), and ending with Zahnkrankheiten (diseases of the teeth). There are in all 189 headings, and most of them are names of diseases.

Each paragraph gives, in what might be called shorthand, the gist of a number of papers on the subject. Almost all the papers referred to are of German origin; very few references to English observers are given. After each paragraph there appears a list showing where the papers appear, with author and title. The book is little more than an extended index, but may be of service to those who wish to find the place of publication of German papers during 1907. There are three indices—one for the paragraph headings, one for authors' names, and one for general subjects appearing in the text.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE A. ALLAN, M.B., Ch.B.

MEDICINE.

Clinical Studies in the Auscultatory Method of Determining Blood-pressure. By E. H. Goodman, M.D., and A. A. Howell, M.D. (*University of Pennsylvania Medical Bulletin*, November, 1910).—Korotkow, in 1905, described a new procedure for estimating the systolic and diastolic blood-pressure when measured by the sphygmomanometer, by auscultating over the artery at a point below the compressing armlet. If the brachial artery be compressed in the usual way, then, on gradually releasing the pressure, certain distinct sounds can be heard with the stethoscope over the peripheral portion of the vessel. Korotkow described various phases, but, briefly, he held that the first sharp tone heard represented the point of systolic pressure, and the point at which all sounds disappeared was the diastolic pressure.

Since then various investigators have studied the method, and the authors have analysed their writings and made observations on their own account.

Five auscultatory phases are recognised during the release of the pressure in the brachial armlet.

First phase.—At a certain point a loud, clear-cut, snapping tone is heard, and it is agreed that this point represents the systolic or maximum blood-pressure. Consensus of opinion points to its being due to the inrush of blood and sudden distension of the vessel walls. In the normal cycle this occurs at about 130 mm. of mercury.

Second phase.—This consists of a succession of murmurs, and begins at about 14 mm. less pressure. Krylow's hypothesis is that these are due to propulsion of blood from a small lumen to a vessel of larger calibre, and thus whirlpool like eddies are produced, the necessary factors being small lumen, small pulse wave, lessened shaking of vessel wall, and diminished rapidity of the blood in the narrowed vessel.

Third phase.—The murmurs disappear, and a tone resembling that in the first phase, but less well marked, is noted. This occurs with a further reduction in pressure of about 20 mm. mercury. The tone is less loud than in the first phase, because, despite the increase of blood flowing through the vessels, the lumen is so much wider that the flow is less rapid and the tones less sharp.

Fourth phase.—This occurs after a further reduction of about 5 mm., the tones become less clear in quality (dull), and it denotes a transition stage from the third to the fifth phase, and continues for about 6 mm. of mercury.

Fifth phase.—All auscultatory phenomena have disappeared, because the normal calibre of the vessel is restored. It occurs about 45 mm. below the first clear tone, *i.e.*, at 85 mm. mercury, and is held by most to correspond with the diastolic or minimum blood-pressure.

Observations were carried into the region of morbid states, with special reference to the significance of the duration of the various phases; but the results, while promising, are not extensive enough to be worthy of note, except the fact that in aortic insufficiency the fifth phase is not present.

It should be observed that observations are made when releasing the pressure in the armlet. While sounds are produced during increase of pressure, they are found to give less accurate results than with the method described.

The procedure as a whole is worthy of extended trial, as any method which will give an easy guide to the estimation of diastolic blood-pressure would be a boon.—GEO. A. ALLAN.

Two New Methods (Auditory and Visual) of Reading Arterial Blood-pressure. By George Oliver, M.D. (*Proceedings of the Royal Society of Medicine*, Clinical Section, vol. iv, No. 1, November, 1910).—This author confines his attention in the auditory method to the point at which the first throb is heard and that at which it ceases. He uses an airtight tambour fastened to the arm at the place at which he wishes to auscultate the artery, and to the tambour is fastened a binaural tube. This is considered more sensitive than the stethoscope, while it leaves the hand free. At the same time the various phases cannot be followed.

The upper limit or first throb felt is accepted as the maximum or systolic blood-pressure.

With regard to the diastolic pressure his views are less definite. The optimum oscillation by the ordinary digital method has offered difficulties in its interpretation, and he suggests that it may signify either minimum or mean diastolic pressure or mean arterial pressure. When compared with the auditory method, he considers that optimum oscillation would correspond to the middle point between the first throb and the last. He is inclined to accept the view that the first throb represents the systolic, the mid-point the mean, and the lowest throb the diastolic arterial pressure.

In the visual method the tambour is fastened by a band to the front of the fore-arm, and communicates its throb to a spirit index, with an air-spring for amplifying the pulsation. The principle otherwise is the same as in the auditory method.—GEO. A. ALLAN.

SURGERY.

How can we Lower the Mortality in Appendicitis? (Abstracts from a discussion at the Thirty-ninth Congress of the German Surgical Society, held at Berlin, March and April, 1910, *Revue de Chirurgie*, October, 1910.)—The discussion was introduced by Dr. Kummel, of Hamburg. For some years past medical men had been practically agreed that early operation was the correct treatment for a case of appendicitis. The statistics of Albu, the writings of Lenharz, and the advocacy by Sonnenburg of the "castor oil treatment" in certain forms of appendicitis had tended to make men waver from the opinion of the necessity of early operation, and thus the re-discussion of the subject arose.

The disease is so important that all doubts as to the correct line of treatment must be dissipated. The number of cases is undoubtedly increasing, and the mortality is so increasing, in spite of all progress in therapeutics, that it can be affirmed with assurance that, in Prussia at anyrate, it is the commonest cause of death between the ages of 10 and 25.

Kummel holds that the mortality can be, and ought to be, greatly reduced, and that this will result when medical men are not content with "taking care" of their patients, but immediately set about "curing" them ("a condition que le médecin ne se contente pas de soigner mais de guérir son malade").

Though a patient may have come safely through one or more attacks of appendicitis, it is quite impossible to regard him as cured. A so-called "first attack" may really be a flare up in an appendix which has already undergone much change without having produced commanding symptoms.

It is quite impossible to make a prognosis in the disease, and no examination of the blood will correctly indicate the state of the appendix; so long as this fact is not clearly appreciated by medical men cases will be allowed to die which ought certainly to be saved.

Early operation, within (as a limit) forty-eight hours of the onset of the attack, is the only method by which a cure can be guaranteed, humanly speaking.

Delay is dangerous, and may prove disastrous. At the least it means loss of time to the patient.

Kummel's results for the past three years show, in a series of 347 cases of acute appendicitis operated on within forty-eight hours, a mortality of 0.5 per cent.

Sonnenburg took part in the discussion, and while admitting early operation to be the greatest of modern surgical achievements, thought that an examination of the blood could differentiate those light forms of appendicitis which could be "cured" by the "castor oil treatment"; at anyrate, he thought the purge an excellent means of differentiating between the light and the grave cases. It made the latter worse, and then he immediately operated.

All the other speakers were strongly in favour of immediate operation, and opposed to the administration of any purgative.

In the *Annals of Surgery* (for March) there is an analysis of a series of 1,411 operations on the appendix by MacWilliams (a communication to the Surgical Society of New York). There is an abstract in the *Revue de Chirurgie* for September, 1910, and the original paper must well repay a careful perusal.—W. RANKIN.

GYNÆCOLOGY AND OBSTETRICS.

Rapid Delivery when the Cervix is not yet Dilated.—

Hauch, of Copenhagen (*L'Obstétrique*, November, 1910), devotes an article to this important subject. He refers to 212 cases out of 22,000 deliveries in his own hospital during the last ten years, and has collected about 500 more. Of his own cases one half were operated on for eclampsia, but he draws attention to the recent tendency to consider eclampsia not in all cases to be an indication for rapid delivery. Hauch discusses the various methods, with their advantages and drawbacks. So much depends on the resistance of the tissues, and this is so difficult to gauge beforehand that it may be necessary to try one method after another. Contrary to the usual opinion, he does not find the cervix less dilatable in elderly primiparae than in others. Manual or bimanual dilatation is easy and convenient when the parts are easily dilatable, but even then the risk of sepsis is great, even when the fingers are thoroughly protected by gloves. Bags and balloons frequently fail when the parts are rigid, and they are difficult to keep in order, and are also costly. If the os is sufficiently open to admit of the practice, forceps may be applied to the head, and so be used as a dilator; or a foot may be brought down and the forceps be applied to the after-coming head. Hauch seems to favour this latter method, but gives the warning that the dangers of laceration are sufficiently known.

A large number of his cases were treated by means of Bossi's dilator, or some modification of it. He says the caps on the points of the blades should be 7 cm. long, and without flanges; the first pattern measured only 3 cm. He dilates at a rate of about four minutes to the centimeter, but says it is impossible to gauge the resistance. Obviously if the handle is difficult to turn, the rigidity is great; but, unfortunately, the converse is not true, for the handle may turn easily while the parts are tearing without dilating.

Dührssen's method of incising the cervix was also used; this is not of much use before the cervix has disappeared. Vaginal Cæsarean section has also been employed, and Hauch prefers to begin with one incision anteriorly,

which is usually enough; if it should prove insufficient, a second can be made posteriorly later.

Tears and incisions bleed least and heal best when in the middle line. They should be sutured immediately after delivery, but it is better to leave them unstitched than to do the operation partially and leave pockets for fluids to collect in.

Of all the methods, perhaps the vaginal Cæsarean section is the quickest, but it can scarcely be practised without skilled assistance and good surroundings. In all the methods sepsis is the chief danger. E. H. L. OLIPHANT.

New Maternity Hospital at Copenhagen.—Paul Bar (*L'Obstétrique*, November, 1910) describes a visit to Copenhagen to be present at the inauguration of the new hospital. The obstetric and gynaecological services make part of a large teaching institution in which there are medical, surgical, and special wards. This particular division is divided into two "sides"—one for the students, under Meyer, and the other for midwives, under Hauch. Plans of the buildings and arrangements are given. There is a large quadrilateral block reserved for these objects, flanked by houses for the professors; for these the professors pay a rent of £56. On admission the women are put into labour rooms with one bed each, and after labour are transferred to small wards. Bar draws attention to the lack at present of an isolation department.—E. H. L. O.

Radium Therapy of Bleeding Fibroids.—Cheron (*La Gynécologie*, September, 1910) describes his further experiences of treatment of uterine fibromyomata by means of Dominici tubes (silver tubes permitting only β and γ rays to pass. In interstitial fibroids the tube is passed only as far as the internal os uteri. In a uterus, say, of the size of a three-months' pregnancy, the dosage is about 5 centigrams of sulphate of radium left in position for six or eight hours, and repeated about a dozen times at intervals of about two or three days. This may be aided in large fibroids by applications over the abdomen through a filter of 2 mm. of lead. In both cases the tubes are covered with tarlatan to avoid secondary radiation. The external method can alone be used where the cervix is much sclerosed.

In most cases the hemorrhage gradually diminishes, till it ceases without or with suppression of menstruation. The tumour often diminishes in size. Cheron, accordingly, is of opinion that fibroids should be treated by radium therapy before trying an operation, except in the case of tumours bleeding so profusely as to require immediate surgical interference; but the treatment is of use in anæmic patients to enable them to tolerate operation.

There is no danger, provided the technique be carefully observed; sufficient tarlatan wrapping must be provided to prevent dermatitis or burning of the soft parts. Aluminium is not a sufficient filter to hinder the passage of soft β rays; $\frac{1}{2}$ mm. of silver is necessary.—E. H. L. O.

Imperforate Anus: Successful Operation. Rémy and Bloch-Vormsler (*La Gynécologie*, September, 1910) relates the case of a premature infant on whom operation was performed about forty hours after birth. A finger passed into the rectum was blocked at about 2 cm. In view of the difficulty of diagnosing the distance between the obstruction and the lower end of the bowel, and of the possible waste of time in exploring from below, it was determined to open the abdomen. The skin was rapidly sterilised with tincture of iodine, and an incision was made to the extent of 6 cm. in the mesial line. The urachus was pushed to one side and the bowel held up while a finger was able to feel the rectum passing down to within 2 cm. of the lower canal. A forceps pushed up per anum was able to bring the lower canal into contact with the bowel, and by a quick jerk was thrust through the obstructing tissue. The blades of the forceps were separated and withdrawn. There was little bleeding; following the escape of the meconium a rubber drainage-tube was fixed in position; this was gradually reduced in size, and finally

removed on the eighth day. The abdomen was rapidly closed in one layer, and the operation lasted about ten minutes. There was a tendency to contraction at first, but this was counteracted by the passage of bougies, at first daily, then at gradually increasing intervals, till now this procedure is required only once a month. There has never been incontinence. The authors recommend this combined operation in preference to the possible waste of time in attempting to reach the bowel from below.—E. H. L. O.

The Treatment of the Third Stage of Labour and Child-bed Fever. Ahlfeld, Marburg (*Folkman's Sammlung*, No. 594, 1910) gives a gossip account of his early reminiscences of maternity hospitals, and of his teachers. He begins with the Trier Institute in Leipsic, to which he went as assistant (*Famulus*) in 1867. Accordingly his recollections go back to the days of pre-antiseptic midwifery, and he devotes a considerable space to the account of the struggle against Semmelweis' doctrine. He discusses the Credé method of expressing the placenta, and draws special attention to the period in which Credé taught and practised the immediate extrusion of the after-birth. Ahlfeld himself taught that the third stage should be physiological.

Up till the early seventies, Credé remained unconvinced of the solid foundation of the Semmelweis doctrine, though from 1866 onwards he made use of Wunderlich's method of taking temperatures. Ahlfeld gives a grotesque account of a visit to Seyfert at Prague in 1868. Seyfert made great sport of new ideas, Pettenkofer and his subsoil water, and so on. Childbed causes anæmia, and when the genius epidemicus supervenes then specific puerperal fever is produced. His treatment consisted in brisk purgation, and Ahlfeld narrates how a nurse was threatened with instant dismissal for venturing to remark that a patient who was obviously recovering had not yet had her bowels moved. "I know better," bellowed Seyfert; "if her bowels hadn't moved she would be dead; shut your jaw." It was on the initiative of Thiersch that in 1875 Lister was invited to Leipsic.

Some pages are devoted to an account of his researches on the results of leaving retained decidua in the uterus, and to the polemics which this procedure entailed on him. He also discusses the presence of streptococci in the vagina of lying-in women, and to the impossibility of distinguishing these from the virulent pathogenic ones. In especial, he quotes Schottmüller, who investigated 1,000 cases of abortion, and found in the genital passages a streptococcus which he names *putridus*, and is capable of migrating upwards, and of causing a general infection.—E. H. L. O.

DISEASES OF THE EYE.

Post-operative Ocular Inflammation set up by or fostered by Auto-infection. By Angelucci, of Naples (*Archivio de Ottalmologia*, April, 1910).—In this paper the author gives us some old thoughts in the light of modern ideas of pathology.

"Old wives," of various kinds, have for generations recognised that some persons heal well whilst others are "bad healers," and it is of the explanation of the variation in healing powers of individuals that the author gives some account.

Quite apart from the recent "opsonic" theory of Wright, and other matters connected with the complex subject of immunity, Angelucci tries to show that toxic substances which are circulating in the blood may gain access to the tissues in greater or less quantity according to the action of the laws which regulate the diffusion of other diffusible substances, such as fluorescin.

Various considerations will, however, modify the effect of these laws, and the author has shown by experiment that after excision of the superior

cervical ganglion in a rabbit, diffusion of fluorescin was more rapid than in the case of controls.

Conversely, excitation of the sympathetic reduced the rate of diffusion.

Removal of the pancreas caused an increased flow, whereas ligation of the ureters diminished the rapidity of the flow of intraocular fluid. Again, in abnormal conditions of the local tissues it is proved that the rate of diffusion may be considerably altered. As regards the eye, it is shown that fluorescin, injected subcutaneously, passes into the vitreous body more rapidly after severe mechanical injuries than under normal circumstances. This is especially true, of course, in the case of perforating wounds, when the intraocular tension has been lowered.

It is, then, clear that if there is a combination of two sets of circumstances, *i.e.*, general and local, favouring diffusion of any toxic substance, as, for instance, when a surgical operation is undertaken in the case of a patient the subject of chronic Bright's disease, an eye is much more liable to "go wrong" in spite of careful asepsis than under other and more favourable circumstances.

Thus, chronic Bright's disease and diabetes favour the occurrence of iritis rather than suppurative conditions after operation such as cataract extraction. A long list might be quoted, including diseases of the mouth, habitual constipation, cystitis, furunculosis, influenza, enteric fever, &c., in which the liability to inflammatory action following operation is greater than under normal circumstances.

The author does not speak of treatment in detail, but one may gather that the treatment, prophylaxis, or what one prefers to call it, adopted by our forefathers in cases of operation, and, presumably, found so far efficacious, may be followed to a limited extent.

Bleeding, perhaps, may not be advisable nowadays, but certainly it is advisable to use means to correct habitual constipation. Sulphate of soda and sulphate of magnesia, with quinine or iron, for a short period before operation in elderly persons seems to assist in preventing inflammatory sequelæ.

Mackenzie strongly advocated such a method of preparation of the patient, and details with considerable care the line to be followed (*Diseases of the Eye*, 1830).—LESLIE BUCHANAN.

On Transplanting Adipose Tissue in Adherent Cicatrices of the Orbital Margin. By Filippo Verderame (*Archivio di Oftalmologia*, January, 1910).—Verderame having reviewed the various methods of dealing with deformity resulting from disease of the orbital margin, shows that all, including injections of paraffin, are open to some objection.

He then describes the method which he has followed in three cases somewhat as follows:—

An incision is made parallel to the orbital margin at a suitable distance from the cicatrix, which is then freed, subcutaneously, from the bone. A small piece of fat tissue is then removed from the abdominal wall, of such size and shape that it shall be a little larger than the space under the skin of the lid. This is then slid into the pocket previously prepared for it, and left in position, the wound in the skin being sutured.

Fat embolism as a result has never been seen so far. The transplanted tissue shrinks to a small extent only, and the cosmetic result is very good.

—LESLIE BUCHANAN.

Section de la Zone Ciliaire ou Ciliairotomie: A new Operation destined to Remedy certain forms of Glaucoma which resist Iridectomy. By Chs. Abadie (*Archives d'Ophthalmologie*, May, 1910).—Abadie has already stated in these *Archives* (January, 1909) that he considers that it is not necessary to excise a part of the iris to remedy glaucoma, as it is the simple radial section of that structure which brings about the good result. He states there that iridectomy during thirty years

has given him brilliant results, but that in chronic simple glaucoma the operation frequently fails to produce any benefit.

In the present paper he states that, in his opinion, it is section of the iritic circle of nerves which gives rise to the benefit, and this has led him to attempt section of the ciliary circle in cases which resist iridectomy.

According to the author, this new operation has given brilliant results also, and one is a little inclined to think that no case of glaucoma can resist Monsieur Abadie now with iridectomy in the one hand and the new "ciliairectomie" in the other.

There is one statement in the early part of the paper which will not, we feel sure, meet with general approval, namely, "No matter how small the coloboma is, the curative action is as great as when it is large and wide." Abadie says this of the iridectomy which is performed for the cure or remedy of glaucoma, whereas the usual view is that, to be beneficial, the iridectomy must be large, especially at the periphery.

In one case of glaucoma (hemorrhagic in an early stage) the reviewer performed a small peripheral iridectomy in the less advanced eye, and a large wide iridectomy in the more advanced. The more advanced eye was cured, and has remained so for seven years, whereas the second eye showed within a month that there was insufficient relief, and the coloboma was enlarged four months later, with the result that the eye has given no more trouble for six and a half years.

Abadie's first operation was carried out in a case of absolute glaucoma, and the result was immediate and absolute relief from pain, decongestion of the eye, and return of the eye to a state of normal tension.

In another case of glaucoma (hemorrhagic) the result was equally good.

A third case was of sympathetic ophthalmia of glaucomatous type, in which iridectomy, after excision of the irritating eye, failed entirely to give rise to any benefit. Sublimate of mercury (1 in 1,000) was injected on several occasions into the vitreous, but failed to bring any relief, and the scleral punctures through which they were made began to bulge.

After the ciliary zone was incised, however, the eye was markedly improved, the tension falling to almost the normal state and the vision being notably improved.

This shows conclusively that the relief was not due to the puncture of the sclera alone, as scleral puncture was performed five times without any resultant benefit.

The technique of the operation is very simple. The conjunctiva is picked up in the upper and outer quadrant just behind the limbus conjunctivæ, and an incision is made in it meridionally back for 15 mm. It is then undermined and freed from the limbus for 5 mm. upwards and 5 mm. downwards. A triangular area is thus exposed, and sutures are placed in position, so that immediately after the puncture has been made the conjunctival flaps may be drawn together again easily.

A triangular Richter knife (something similar to an old Beer's cataract knife) is now entered at the apparent corneo-scleral margin, with the back to the cornea, and pushed straight in towards the centre of the eye. In withdrawing the knife the incision may be enlarged to about 7 or 8 mm. (say, quarter of an inch).

The conjunctiva is now drawn together and fixed.

In no case done had any untoward circumstances marred the simplicity of the operation.

Needless to say, the most rigorous aseptic measures must be maintained.

—LESLIE BUCHANAN.

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The Role played by Alteration of the Composition of the Intraocular Fluids in the Pathogenesis of Glaucoma. By M. Uribe Y. Troncoso, Mexico (*Archives d'Ophthalmologie*, February and March, 1910).—In a long paper Troncoso argues in favour of the proposition that undue serosity of the intraocular fluid is a circumstance favouring the

occurrence of glaucoma. The author does not deny the effect of changes in the blood-vessel wall as a most important primary cause, but holds that the greater difficulty of osmotic interchange, as compared with a crystalloid fluid, when a colloid fluid is dealt with, has some considerable influence.

He explains the fact that increase of tension is not great in cases of inflammatory action in the eye, by supposing that the ability of some persons to dispose of colloid fluid is greater than that of others. This is not a very convincing argument, we imagine.

The paper is rather long and contentious to allow of an exact abstract being made, but it is worthy of perusal by anyone specially interested in the subject.—LESLIE BUCHANAN.

MATERIA MEDICA AND THERAPEUTICS.

Medicaments in the Management of Tuberculosis. By Frank J. Charteris (*The British Journal of Tuberculosis*, October, 1910).—It is now fairly universally recognised that no antiseptic strong enough to kill the tubercle bacillus can be supported by the living tissues without damage, and of late treatment has been chiefly directed to increasing the patient's resistance. A new departure has been made in the treatment of surgical tuberculosis.

"Enzymes in the treatment of tuberculosis."—The polynuclear leucocytes contain a proteolytic enzyme which can be extracted by water or by alternate freezing and thawing in salt solution. The lymphocytes do not contain an enzyme. Thus, in the tuberculous abscess the proteolytic ferment is deficient, and local destruction is not so rapid, and the thick albuminous secretion is not readily absorbed. Jochmann suggested the local injection of the proteolytic leucocyte ferment into the tuberculous cavity after aspiration. A watery extract of leucocyte exudate, splenic pulp, or bone-marrow was found effective. Later he found trypsin a sufficient substitute, using a 1 per cent solution with half per cent phenol. Good clinical results were obtained in cold abscesses, tuberculosis of glands, bones, joints, &c. After the injection of 1 to 2 c.c. into the cavity the exudate becomes brown and syrupy, and later thin and serous. The wall of the cavity also becomes replaced by healthy granulation tissue, and so the cavity becomes healed up.

"Carbenzyme" has been used by Falk and Sticker in the treatment of malignant tumours. Almost no general reaction follows, and sarcomatous masses are found to shrink rapidly. Verth used carbenzyme in surgical tuberculosis. The response of the tissues was similar to that after the injection of iodoform glycerine, but the curative action greater. He used a thin suspension in a half per cent of soda solution, and injected 2 to 4 c.c. into the cavity. The injection should not be repeated for several weeks. In some cases no good resulted, in others a rapid cure was obtained.

Wright advocates systemic treatment, since even in early cases the tubercle bacillus has been discovered in the blood. He injects 1·15 gr. of mercury succinimide deeply into the muscles every other day. The dose is slowly increased until the gums become tender or diarrhoea is produced; it is then reduced until these symptoms pass off, and the injections are continued until thirty in all have been given. After a rest of fourteen days the last dose is resumed and continued for another thirty injections. Sometimes the dose is reduced and given alternately with arsenious trioxide, 1·30 gr. Wright claims good results irrespective of the tissue or organ involved. Out of 83 patients, 89 per cent were improved, and 7 definitely cured; 20 cases out of 24 of secondary ulceration of the larynx were cured.

Penrose combines this mercurial treatment with tuberculin, and finds that after a mercury course the patient can stand four to five times the tuberculin he could take before.

Sea-water injections.—Sea-water contains about 3·3 per cent of mineral salts, and on diluting 2 parts of sea-water with 5 parts of fresh water a solution is got isotonic with blood plasma, and almost identical in mineral content. It is sterilised by passing through a porcelain filter. In surgical forms of tubercle, lupus, &c., from 50 to 100 c.c. is injected into the scapular or trochanter region. In pulmonary tuberculosis the quiescent afebrile forms are most suitable. Boutillier finds that the injections remove the malnutrition in tuberculous disease.

Menthol-eucalyptol.—Berliner advocates intramuscular injections of a solution containing 10 parts menthol, 20 eucalyptol, in 100 parts of ol. dericin. He injects 2 c.c. two or four times a week into the gluteal region, later, as the case improves, a solution double as strong twice weekly in the same dose. The injections are not painful, and are valuable in the first or second stages of phthisis, lessening the expectoration and alleviating the cough.—JAS. SCOTT.

PATHOLOGY.

The Difficulties of Bacteriological Diagnosis in Lesions where *Spirochætæ* are found Microscopically, as illustrated by a Case of Chancriform Ulcer of the Tongue. By MM. P. Ravaut and M. Verdun (*Gazette des Hôpitaux*, 26th May, 1910).—Although Schaudinn's discovery of the treponema pallida has greatly facilitated the diagnosis of early syphilitic lesions, there is still room for the exercise of much prudence and reserve in cases where there is secondary infection by a morphologically similar organism.

Three classes of cases are to be distinguished:—

1. Those in which the *spirochæta pallida* is found in a state of purity, and in which the diagnosis presents no difficulty. This includes non-ulcerated cutaneous lesions and certain genital chancres.

2. Cases where the *spirochæta pallida* is associated with other organisms from which it can be fairly readily distinguished—cocci, bacilli, and certain spirilla, *e.g.*, *spirochæta refringens*. This includes most of the secondary ulcerated lesions.

3. Cases in which the treponema occurs in association with spirilla, from which it can only be distinguished with great difficulty. This applies especially to certain cutaneous ulcerations, and to lesions in the mouth and other natural cavities rich in saprophytes.

The authors record an interesting case belonging to the last class. A young healthy man, 18 years of age, came to hospital complaining of a small indurated ulcer on the right margin of his tongue. It had appeared spontaneously, and its onset was insidious. There was no pain nor discomfort. The ulcer was oval in shape, and measured 2·5 cm. in long diameter. The margins were quite regular, and overhung the surrounding tissue, while the floor was smooth and red. Palpation revealed the fact that the ulcer rested on an indurated base, which, however, did not extend beyond the elevated margin.

The characters of the ulcer were for the most part those of a syphilitic chancre, but there was a striking absence of glandular enlargement such as usually accompanies primary syphilis in the buccal cavity. Simple inflammatory ulceration could be excluded by the absence of local trauma, and by the fact that the patient's general health was good. The diagnosis, then, lay between syphilis, tubercle, and cancer. As against tubercle there was the absence of ragged edges, and of yellowish points beyond the ulcerating margin. Moreover, there were no other manifestations of tubercle, and primary tuberculous ulceration of the tongue is very rare. The patient's age (18), and the fact that he was a non-smoker, were both against a diagnosis of cancer.

Recourse was therefore made to bacteriological investigation. Fresh smears from the ulcer were examined by the ultra-microscope, while films stained by Geimsa's method were examined in the usual way. These showed the presence of a great variety of organisms, including six or seven types of spirochaetae, some of which were indistinguishable from *treponema pallida* in length, number, and amplitude of spirals, staining reactions, &c.

A histological examination of the ulcer was now made, with satisfactory results. Sections stained by Levaditi's method demonstrated the fact that the organisms were present only on the surface of the ulcer, and not deep down as in the case of a syphilitic chancre. At the same time the lesion was found to be a typical squamous epithelioma. No tubercle bacilli were found in the section, and inoculation of a guinea-pig yielded negative results. Wassermann's reaction was also negative.

The authors conclude that in suspicious ulcers about the mouth, the genital organs, and, in certain cases, the skin, bacteriological investigation by smears only is insufficient to establish a diagnosis of syphilis. Even by the ultra-microscope one cannot, in such cases, hope to obtain conclusive evidence. Other diagnostic methods must be employed as well, and especially histological examination and inoculation of a monkey.—MATTHEW J. STEWART.

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- Genito-Urinary Surgery and Venereal Diseases, by J. William Whyte, M.D., and Edward Martin, M.D. Illustrated with 300 engravings and 14 colored plates. Ninth edition. Philadelphia and London: J. B. Lippincott Company. (21s. net.)
- Applied Anatomy: The Construction of the Human Body considered in relation to its Functions, Diseases, and Injuries, by Gwilym G. Davis. With 630 illustrations, mostly from original dissections and many in color, by Erwin F. Faber. Philadelphia and London: J. B. Lippincott Company. (24s. net.)
- Normal Histology, with Special Reference to the Structure of the Human Body, by George A. Piersol, M.D., Sc.D. With 438 illustrations, many of which are in colors. Eighth edition, rewritten. Philadelphia and London: J. B. Lippincott Company. (15s. net.)
- Disease of the Pancreas: Its Cause and Nature, by Eugene L. Opie. Second edition, rewritten. Illustrated. Philadelphia and London: J. B. Lippincott Company. 1910. (15s. net.)
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**GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR
THE FOUR WEEKS ENDED 17TH DECEMBER, 1910.**

	WEEK ENDING			
	Nov. 26.	Dec. 3.	Dec. 10.	Dec. 17.
Mean temperature, . . .	32·8°	36·1°	44·2°	45·2°
Mean range of temperature between highest and lowest,	10·1°	7·7°	7·8°	6·6°
Number of days on which rain fell,	4	3	7	5
Amount of rainfall, . ins.	0·65	0·08	1·32	0·80
Deaths registered, . . .	285	294	271	291
Death-rates,	16·8	17·3	16·0	17·2
Zymotic death-rates, . .	1·4	1·1	1·3	0·9
Pulmonary death-rates, .	5·5	5·5	5·8	5·1
DEATHS—				
Under 1 year,	42	51	54	55
60 years and upwards, .	81	70	64	98
DEATHS FROM—				
Small-pox, . . . . .	...	...	...	...
Measles,	1	...	1	...
Scarlet fever,	6	2	1	2
Diphtheria,	5	5	7	4
Whooping-cough, . . .	8	7	3	7
{ Fever,	2	1	2	...
{ Cerebro-spinal fever, .	...	...	1	1
Diarrhœa,	9	5	2	3
Croup and laryngitis, .	...	...	...	...
Bronchitis, pneumonia, and pleurisy,	72	74	68	69
CASES REPORTED—				
Small-pox, . . . . .	...	...	...	...
Cerebro-spinal meningitis, .	1	1	2	1
Diphtheria and membranous croup,	54	40	52	37
Erysipelas,	27	27	39	25
Scarlet fever,	89	82	89	107
Typhus fever,	1	...	1	...
Enteric fever,	6	4	6	4
Phthisis,	47	49	62	56
Puerperal fever, . . .	2	4	4	3
Measles,*	23	14	27	21

* Measles not notifiable.

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ORIGINAL ARTICLES.

SOME REMARKS ON THE POSITION OF LARYNGOLOGY
AND RHINOLOGY IN MEDICINE.¹

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Royal Infirmary.

GENTLEMEN.—In the first place, let me thank you for nominating me Honorary President of your Faculty. I greatly value the distinction thus conferred on me, which I regard as a mark of appreciation of the work I have for the last sixteen years carried out in Greenock. Twenty-two years ago, when I started as a surgeon for throat, nose, and ear, specialism in this country had not attained the position which it now enjoys, and not a few members of the profession regarded it as something that should be discouraged as much as possible. I venture to say that to-day this feeling has all but vanished, and it is now generally recognised that specialists do as good and as useful work as any other members of the profession.

With the object of showing that as regards laryngology and

¹ Address as Honorary President of the Greenock Faculty of Medicine, 26th October, 1910.

rhinology, this altered opinion is not altogether undeserved, I shall endeavour to give you a brief sketch of their inception, together with a few examples of their helpfulness to medicine.

History.—Although it is less than sixty years since laryngology began to seriously occupy the attention of the profession, mirrors, as aids in diagnosis, had previously been used by several. As far back as the middle of the eighteenth century, we have records of attempts having been made in this direction. In 1829, Babington exhibited his “glottiscope” in London, with which he was able to examine the larynx, while later, Baumés, in Lyons, and Liston, in London, demonstrated the possibility of examining this region. Their methods, however, were not regarded as suitable for general application, and never excited serious interest.

In 1854, Emmanuel Garcia, a singing master in London, anxious to study vocalisation from a scientific basis, and unaware of what had previously been done in this direction, succeeded in observing the movement of the vocal cords in his own person. In the following year he communicated the results of his experiments in a paper to the Royal Society of London, entitled, “Physiological Observations on the Human Voice.” His paper at the time received little or no attention in England, and its importance was not appreciated until it passed into the hands of Dr. Türk, of Vienna, who took up the subject with enthusiasm, and in the summer of 1857 tested its value in his hospital wards. For examining the larynx, Türk used sunlight. In the winter of the same year, Czermak, who was at that time professor of physiology in Pesth, while employing Türk’s mirrors used artificial light as an illuminant. To show how very slowly new ideas germinate, it may be mentioned that the first reflector was held in the hand, and therefore could only be used for purposes of examination. Czermak had it so constructed that it could be held between the teeth by means of a projecting portion covered with cork, and was thus enabled to utilise it for therapeutic purposes. He was also the first to employ the method for examining the nose and upper part of the trachea, and by demonstrating its use in different European capitals did much to bring it intimately before the profession.

Laryngology and rhinology were thus firmly established by Türk and Czermak, and ever since their history has been that of steady progress. Laryngology owes much to Czermak, but Ludwig Türk must always be regarded as its real founder. He spared neither trouble nor expense in its study and development, and the fruit of his observations, as embodied

in his classic work on the subject, is a monument of careful, original research.

Great progression in any branch of science is seldom possible, except with the aid of other discoveries or events having a favourable bearing on its advancement, and the introduction of the laryngoscope was fortunate in being followed by two circumstances which play an important part in its rapid development. The first of these happy circumstances was the discovery of a local anæsthetic. One has but to read of the tedious and often ineffectual means adopted in the beginning to overcome the sensibility of the parts, to appreciate the importance of this discovery, and become convinced that without it neither laryngology nor rhinology would have attained the position they have.

The discovery of cocaine as a local anæsthetic and vaso-constrictor, and the possibility of applying it for this purpose with ease and safety, at once swept away a host of difficulties that hitherto had stood in the way, and, in a remarkable manner, facilitated examination and treatment of the regions concerned. But the same anatomical reasons that had for so long kept those parts a *terra incognita*, offered even greater difficulties to their treatment, and to overcome these new methods were called for.

This brings us to the second great factor in the popularising of laryngology, viz., electricity. It was early perceived that electricity lent itself to be employed so as to surmount these obstacles, and this fact was soon turned to practical account. Among other benefits obtained as the outcome, I need only mention the use of the electric light for transillumination as an aid to diagnosis, and the manifold services which the electric cautery has rendered as a therapeutic agent. Although not absolutely necessary for the purpose, we must also concede to the electric light a large share of credit in helping to perfect the means for directly examining the larynx, trachea, bronchi, and œsophagus.

It is outwith the scope of these remarks to go further into the historical side of the subject. What has been said is of value as showing how a discovery pregnant with far-reaching consequences may be lost, unless there be behind it energy and enterprise sufficient to carry it beyond the initial stage, and impress its importance on those whom it may concern. These qualities were not wanting in the present instance, and Garcia's discovery, instead of being lost in oblivion, was forever rescued therefrom, through attracting the attention of the two singularly able men whose names we

have had before us. That their labours have not been in vain, but, on the contrary, of lasting benefit to the profession, will, I trust, appear from the following remarks.

The subject is too broad to permit of being more than touched on. I shall, therefore, confine myself to giving a few examples of the benefits conferred on medicine by this specialty, and will begin with the larynx.

Laryngology.—The larynx has two functions in the economy—the function of respiration, which consists in the moving apart of the vocal cords during inspiration, and the function of phonation, in which they can be approximated during expiration, so as to throw the columns of passing air into sonorous vibrations. These functions imply a constant state of unrest of the parts, and for this reason as well as on account of its anatomical position, it is a favourite seat for the manifestation of pathological changes. These may invade its tissues, or, acting external to them, may interrupt its functions by pressure on its structures, or through interfering with its nerve supply. Its position renders it of vital consequence to the entire organism, while its phonatory function gives it great diagnostic importance by the early warning it affords of any interference with its mechanism. I wish to emphasise its value as a diagnostic centre, as perhaps it is chiefly from its use in this respect that laryngology has rendered the greatest service to medicine.

In confirmation of this statement I shall cite one or two familiar examples. As is well known, an aneurysm of the arch of the aorta may, by pressure on the left recurrent laryngeal nerve, produce paralysis of the vocal cord on the same side, and thereby cause a weak, low-pitched, husky voice. Prior to this supposed involvement of the recurrent nerve, the aneurysmal dilatation may give rise to no symptoms, or only to those so indefinite in character as not to excite suspicion of their real cause. It can be readily understood what a valuable indication this symptom affords us in such a case, where the first essential is rest. Here an early diagnosis is of the first consequence, but without a laryngoscopic examination the exact condition can only be suspected, and any alteration in the voice may well be attributed to a local catarrh, rather than to the influence of a distant lesion. It has been my experience, on more than one occasion, to meet with a case of this nature, where the huskiness of the voice had been taken as due to a laryngitis and treated accordingly, while the patient, for months after the first onset, had pursued a very heavy form of employment. Although at the

present time instances such as I have just given are exceptional, before the use of the laryngoscope they must have been far more rare.

Occasionally the same error from the want of a laryngoscopic examination is met with in cases of soft fibromata, the so-called singers' nodules. In my experience, sufferers from these growths are usually met with among lady teachers in board schools, where the voice is constantly exerted in a noise. The want of a correct diagnosis is not here surrounded with the gravity that attaches to a condition due to an aneurysmal lesion, but it is of great practical importance that such should be arrived at, as otherwise much valuable time will be wasted, and needless anxiety caused to the patient.

Functional aphonia is another condition where, through a misinterpretation of the cause of the symptoms, errors may crop up. Here the impairment in the voice arises from an inability to adduct the vocal cords, and the huskiness arising therefrom may be mistaken for a chronic laryngitis, or confounded with quite another kind of lesion. The kind of lesion I refer to is where the cords are prevented from approximating by a mechanical obstruction, due not infrequently to a tubercular infiltration in the interarytenoid space. Without seeing the parts it is not possible to differentiate between the two affections, as both are met with in the same type of patient, and the alteration in the character of the voice is almost identical. An early diagnosis is of the first consequence in pulmonary tuberculosis, and the larynx is said to be affected in 30 per cent of such cases. The value of a laryngoscopic examination for this purpose is, in my opinion, great: for, in many instances, alterations sufficiently marked to excite suspicions occur in the larynx, before anything of equal significance can be detected by a physical examination of the lungs.

Many other examples might be given, but I trust those just mentioned will suffice to point to the usefulness of laryngology to general medicine.

Rhinology.—Rhinology differs from laryngology in offering a wider field for direct treatment. After a satisfactory view of the nasal regions had been made possible, their physiology assumed greater importance, and its significance was carefully investigated. It was found that the chief function of the nose did not lie in simply sheltering the olfactory nerve, but in constituting the natural respiratory pathway. Olfaction doubtless contributes to the pleasures of life by aiding in the perception of flavours, and enabling us to distinguish pleasant

odours, as well as to its preservation by giving warning of deleterious matter in the air we inspire. This function of the nose is not its most important, which are rather those of filtering, warming, and saturating the air with moisture, preparatory to its coming in contact with the delicate tissues of the lungs. Anything interfering with free nasal respiration throws these into abeyance, and it was found that the frequency with which this was met with, and the prejudicial effect it had on the individual, was very great. The chief cause of these obstructions is adenoids or hypertrophies of the pharyngeal tonsil. Meyer, of Copenhagen, was the first to draw prominent attention to them, and although it is nearly fifty years since that time, the meaning of his observations are only now being fully grasped.

Met with essentially in children, there is no denying the injurious effects which this tissue when hypertrophied has on the growing individual. By maintaining a state of catarrh in the naso-pharynx, and interfering with the ventilation of the tympanum through the Eustachian tube, adenoids are the most common cause of deafness in children. Treated early, this condition can usually be rectified, but if allowed to persist it will ultimately induce changes in the organ of hearing that cannot altogether be removed. Absorption from these growths is a fruitful cause of enlargement of the cervical glands, and in all cases of adenitis an examination of the naso-pharynx should never be omitted. By necessitating mouth-breathing, they interfere with the expansion of the lungs, and in this way may produce permanent deformity of the thoracic walls.

Those are but a few of the evil consequences that may arise from the presence of adenoids, but they are sufficient to show how the physical and intellectual development of the entire organism may be stunted and retarded by them. Adenoids obstruct nasal respiration through their position in the naso-pharynx, but hindrance to this can arise in the nasal passages themselves. In such case, the causes may be structural anomalies giving rise to septal deflections, spurs, or ridges, new growths, or hyperplasias. All these changes may be met with in children.

But the recognition and treatment of nasal obstructions form only a part of the good work which rhinology has done to medicine. It has revolutionised the diagnosis and treatment of suppurations of the nasal accessory sinuses, and in so doing has facilitated the amelioration or removal of the many disturbances which result from their presence. Valuable

service has also been done to ophthalmology, in showing how intranasal conditions may directly affect the eye or influence its treatment. To it also is due the credit of stimulating the investigation of nasal reflex neuroses, such as we find associated with nervous cough, spasm of the glottis, paroxysmal sneezing, or asthma.

As forming part of the duties of the laryngologist, and developed chiefly by those practising as such, cesophagoscopy and tracheoscopy fall to be mentioned in this place. The technique pursued under these names is the latest development in utilising lights and mirrors for examining the hidden cavities of the body, and every year brings forth fresh records of its usefulness as a means of recognising and treating pathological conditions met with in these parts. The method of examining and treating the larynx directly by this means has, under certain circumstances, supplanted the old indirect way, and when we have to deal with foreign bodies that have become lodged in the cesophagus, trachea, or bronchi, it is altogether indispensable.

What I have said will, I trust, serve to show that the advance in the strictly scientific side of medicine which called forth greater specialisation has been justified by the service which specialism, in turn, has done in furthering its progress. By opening up new spheres of the body, it has rendered the treatment of many conditions possible that formerly were unrecognised, or being insufficiently understood were left to nature. But its good work has to be further expanded and its present position more than maintained. This cannot be done by confining our ideas to a limited area of the body, and working in a narrow unthinking groove. Such a course is retrogressive, and, sooner or later, will react unfavourably on its follower. Our duties to our profession, to our patients, and to ourselves call for something very different. We recognise anatomical boundaries, but, in reality, the interdependence of one organ on another is such that no limits can be fixed. It is only by having a broad grasp of the science of medicine, and working through and in co-operation with it, that specialism can hope to fulfil its duties in the highest sense, and so justify its existence.

HÆMATOPORPHYRINURIA NOT DUE TO DRUGS, IN A PATIENT WHOSE URINE CONTAINED AT TIMES HÆMOGLOBIN AND AT TIMES SUGAR.¹

By T. K. MONRO, M.A., M.D.,

AND

H. H. BORLAND, M.B., D.P.H.CAMB.

THE patient, J. M'N., is an unmarried woman, aged 27 years, a housekeeper by occupation. She came under observation on this occasion on account of symptoms resembling those of a mild type of diabetes.

Past history.—At the age of 10 she had tuberculous glands removed from the neck, the dissection being carried well down to the shoulder. The wound did not heal properly, and a second operation was performed when she was 12. Even this was not completely successful, for the upper part of the wound healed and broke again repeatedly. At length *x*-rays were employed, and by this means healing was finally obtained in March, 1907.

About four years ago she was under our observation in the wards of the Glasgow Royal Infirmary, suffering from gastric ulcer with considerable hæmatemesis, and she had a recurrence of this illness in the following year. She has never had any affection of the chest.

Menstruation did not begin till she was 18, and was in abeyance from 22 to 24. Since then it has recurred at intervals of from four to six weeks.

Family history.—Her father died at 60 from drowning, and her mother died at 60 from cerebral hæmorrhage. There were thirteen of a family. Three died in infancy: one brother at 6 from scarlet fever: two brothers by accident; one sister from cardiac disease; and two sisters, æt. 24 and 26 respectively, from consumption.

Present illness.—In July, 1906, patient went on holiday to a village on the West Coast of Scotland, arriving there in perfect health. She joined some other girls in going to bathe

¹ This case was mentioned, though not described in detail, in the first number of the *Quarterly Journal of Medicine* (October, 1907, p. 51), but the remarkable combination of features which it presents appeared to justify a more detailed narrative. The report now submitted was drawn up in 1908.

in the sea one day at two o'clock, and attempted to swim, but was only in the water for about ten minutes when she was compelled to come out on account of feeling cold. Her teeth chattered, and her hands and feet were livid. She was very sick, and vomited her dinner immediately after coming out of the water. She dressed as quickly as possible and walked to her lodgings, taking twenty-five minutes to walk. During the whole of this journey she felt chilled. She does not remember noticing the colour of the urine that evening, and says it was not till the following week that she observed its "bright magenta" tint.

In August of the same year, she spent a week on the East Coast, where she found that the urine still retained its peculiar colour. Her general condition was not satisfactory at that time, as she frequently vomited, and ever since the chill while bathing she had been compelled to rise several times each night to micturate.

Since her return from the East Coast the tendency to pass urine of an abnormal colour has continued, though she notices that the depth of the colour varies a good deal. She has observed that after a large dose of salts, the urine may be less dark, and, indeed, it has occasionally seemed to be clear for two or three days, but it invariably resumes its reddish colour.

She has suffered a good deal from thirst and dryness of the mouth, and she has recently lost weight somewhat, and been troubled with boils in the axillæ.

The following notes will help to show how the condition of the urine varied from time to time at one period in 1907. It may be said here that albumin was sometimes absent, and that it never amounted to more than a mere trace. It will be noted, further, that on all four occasions the colour of the urine was abnormal, though the particular colour was not always the same. The first and fourth specimens contained sugar: the second and third contained hæmoglobin. The presence of the sugar was associated with a high specific gravity and a dark colour. We are indebted to Dr. D. F. Riddell for the spectroscopic investigations.

8th May, 1907.—Urine purplish red. No drugs being administered. Sugar reaction obtained. General symptoms of diabetes present.

9th June, 1907.—Urine coloured like port wine. Reaction neutral. Specific gravity, 1007. Guaiac test shows presence of hæmoglobin. Fehling's solution not reduced. Microscopic examination shows no blood corpuscles even after

centrifugalising. Acetic acid, when added to the urine, darkens its colour. Darkening is even more pronounced with caustic potash.

14th June, 1907.—Colour, pale magenta. Reaction alkaline. Specific gravity, 1015. Hæmoglobin present. Fehling's solution not reduced.

17th June, 1907.—Urine dark reddish brown. Reaction acid. Specific gravity, 1035. Fehling's solution reduced. Phenylglucosazone crystals obtained. No definite reaction for albumin. Guaiac test negative.

Postscript (26th September, 1910).—The urine became clear and otherwise normal. Patient is now married and apparently in good health.

THE DR. JAMES WATSON LECTURES ON RECENT ADVANCES IN HÆMATOLOGY.

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(Continued from p. 34.)

LECTURE III.

I PROPOSE now in the time that remains at our disposal to pass in review, very briefly, some of the recognised diseases and disorders of the blood, and to try to indicate to you the present position of our knowledge in regard to their etiology and pathogenesis.

Secondary anæmia.—Secondary anæmia is not in itself a disease, but rather a symptom occurring in the course of many different diseases. It may, therefore, be due to a variety of morbid conditions. There may be a diminished production of blood corpuscles due to some fault of the bone-marrow. There may be loss of blood due to one or more hæmorrhages, or increased destruction of red corpuscles as in the septic infections, rheumatism, malaria, and, indeed, with almost any form of intoxication. There may be both

increased destruction and defective formation of blood acting at the same time.

The condition of the blood in a typical case of secondary anæmia is fairly characteristic. There is a moderate diminution in the number of red cells, and a greater diminution in the hæmoglobin. The individual red cells tend to be smaller than normal, and the number of poikilocytes and normoblasts is in proportion to the degree of the anæmia. There is usually a slight leucocytosis.

Some of the severer secondary anæmias may closely resemble pernicious anæmia, and hæmatologists are not agreed as to the distinction that should be drawn between the two. Certain writers hold that all anæmias of known cause should be regarded as secondary anæmias, whether or not there are megalocytes and megaloblasts present in the blood. Others take the view that the presence of these cells indicates a specific change in the bone-marrow, and that all cases with megalocytes and megaloblasts in the blood should be classed as pernicious anæmia. I shall discuss this point more fully later on.

Chlorosis still remains a disease of unknown etiology, and whilst it has many of the characters of secondary anæmia it is convenient to keep the two conditions separate. A notable feature which might serve to distinguish chlorosis from the other anæmias is that in the former there is a marked increase in the total amount of blood plasma, so that the blood-vessels are fuller than normal. So far, there is no easy method of estimating the total volume of the blood, at least such as would be suitable for use in clinical medicine, although the method of Haldane and Lorrain Smith has been used for this purpose in some of the London hospitals.

Cabot has made the interesting observation that in America chlorosis is disappearing, and that there are now not nearly so many cases as there were five to ten years ago; he cannot offer any explanation for this decrease in number. I know of no figures which would show the same state of matters in this country, but the subject might be worthy of some inquiry.

Splenic anæmia is another anæmia of which the etiology is unknown. The blood has the characters of a secondary anæmia with leucopenia: but the distinguishing feature of

the disease is the very considerable enlargement of the spleen, which enlargement seems to precede the anæmia. There is also a tendency to hæmorrhage, especially from the stomach. Many of the cases terminate with cirrhosis of the liver, ascites, and sometimes jaundice, to which symptom-complex the term *Banti's disease* is given.

It is doubtful if splenic anæmia is a specific disease, and not just a grouping of symptoms which may be caused by several different morbid conditions. The enlargement of the spleen is the one constant change found *post-mortem*, but on microscopical examination the histological appearances of this organ may be somewhat different in the different cases. It is customary to classify these changes under one of two different types.

1. In the first and more common type there is a general hyperplasia and fibrosis of the whole organ, involving capsule, reticulum of pulp, and Malpighian bodies. The blood sinuses usually show proliferation of their endothelial cells, and these cells probably go to form the new fibrous tissue of the reticulum. There are strikingly few blood corpuscles enclosed in the altered pulp. Associated with this change in the spleen there is frequently a moderate cirrhosis in the portal areas of the liver: also, the portal vein, or one of its branches, may be found occluded by an old thrombus. The hæmolymp glands, too, may be enlarged, and Warthin¹ has described a marked endothelioid hyperplasia in these glands in four cases of Banti's disease examined by him. There is no constant change in the marrow in this type of splenic enlargement other than such as may be met with in any other secondary anæmia.

2. In the second type, that described by Gaucher, the appearances are very distinctive, and cannot properly be regarded as an earlier stage of type 1. On microscopical examination of the spleen there are seen to be a congeries of little rounded spaces filled with large cells, of 20 to 40 μ diameter, each cell having one or more small, deeply stained nuclei, and an abundant homogeneous-looking cytoplasm. Surrounding these spaces there are bands of coarse connective-tissue. Similar groups of cells have been found in this type of splenic enlargement in the liver, lymphatic glands, and in the bone-marrow. There has been considerable difference of opinion as to the nature and origin of these cells, but the most recent writers seem to regard them as

¹ *Trans. Assoc. Amer. Physicians*, vol. xxiv, p. 286.

derived from the reticular or endothelial cells of the tissue in which they are growing. It is uncertain if they ultimately form fibrous tissue.

It is said that this Gaucher type of splenic anæmia differs somewhat in its clinical features from the ordinary type of the disease. In the first place, it has a tendency to affect several members in a family. The anæmia, too, appears later, and it and the general symptoms of debility are less pronounced. The liver tends to be larger than in the ordinary type.

There is no satisfactory explanation of the splenic enlargement in splenic anæmia. The fibrosis of the spleen, the tendency to hæmorrhages, and the associated cirrhosis of the liver suggest a resemblance to a primary cirrhosis of the liver. From that point of view the splenic enlargement would be regarded as toxic in origin; and the anæmia would be due to the same toxin, for the fibrosed spleen cannot very well be associated with an increased hæmolysis. The fact that excision of the spleen seems to cure the anæmia gives some colour to Banti's suggestion that the enlarged spleen elaborates toxic substances, and that the anæmia is due to the action of these toxins. There is, however, no proof of the formation of such toxins in the spleen: and so the pathogenesis of splenic anæmia must, in the meantime, remain obscure.

It is interesting in this connection to note that H. B. Day and A. R. Ferguson have recorded "A form of Splenomegaly with Hepatic Cirrhosis endemic in Egypt,"¹ which seems to have the clinical features of Banti's disease. They have not determined the cause of the condition, but they associate it with a toxæmia of intestinal origin.

Kala-azar, or tropical splenomegaly, is a form of anæmia with enlargement of the spleen met with in India. The symptoms are fever of an irregular type, great enlargement of the spleen, enlargement of the liver, and secondary anæmia. There is a very marked leucopenia (about 1,000 white corpuscles per c.mm.), and the decrease is chiefly in the polynuclears, there being a relative increase of both lymphocytes and large mononuclear cells. As the disease advances emaciation becomes very marked, and sometimes there are symptoms of obstruction in the portal circulation.

¹ *Annals of Tropical Medicine and Parasitology*, November, 1909, vol. iii, No. 3.

The duration of the illness is usually from six to nine months, although some patients live for two to three years. It is practically always fatal, the mortality being from 96 to 98 per cent. *Post-mortem* there is usually found some cirrhosis of the liver, both intralobular and multi-lobular. The spleen, whilst greatly enlarged, rarely shows much fibrosis.

It is now generally accepted that the disease is due to the presence of a protozoön, to which the name "Leishman-Donovan body" has been given, after its discoverers. This organism is found in great abundance in the spleen, liver, bone-marrow, and, indeed, in most of the other tissues as well. It has also been seen in the blood, inside the polynuclear cells. It is thought to be conveyed from one person to another by means of the bed bug.

The anæmia and splenic enlargement of kala-azar are thus due to a definite and a known cause, and they must be regarded as analogous to the anæmia and splenomegaly of, for instance, enteric fever rather than to that of ordinary splenic anæmia. Kala-azar is, therefore, more correctly classed with the specific fevers than with the diseases of the blood.

Infantile splenic anæmia (von Jaksch's splenic anæmia or anæmia pseudo-leukæmica infantum) is a condition affecting children between the ages of 9 months and 2 years, and it is characterised by anæmia of the secondary type, leucocytosis, and enlargement of the spleen. The blood usually shows a proportion of nucleated red cells, both normoblasts and megaloblasts. The increase in the white corpuseles may affect, more or less uniformly, all varieties of the white cells normally present in the blood, but there is nearly always in addition a proportion of neutrophile myelocytes. It must, however, be remembered that in infancy the number of white corpuseles in the blood, as well as the proportions of their several varieties, is not the same as that of the adult. In children under 2 years the white corpuseles number in health from 12,000 to 14,000 per c.mm., and of these, the lymphocytes represent from 50 to 70 per cent, and the polynuclears from 30 to 40 per cent.

Opinions are divided as to whether infantile splenic anæmia is a specific disease, or simply a secondary anæmia occurring during infancy, a period at which the spleen and lymphatic glands readily enlarge, and the blood-forming

organs generally are easily disturbed. There is no proof of the disease being due to a specific cause: and the arguments in favour of this view are based on clinical grounds, that is, on the more or less characteristic clinical picture the cases present to us. Further, it has been pointed out that the same causes as produce secondary anæmia in the adult are found associated with the origin of infantile splenic anæmia, and that the *post-mortem* appearances in no way suggest a disease *sui generis*. Histological examination of the spleen in some of the cases shows thickening of its capsule and fibrous reticulum, but in a number of other cases there is no evidence of such a fibrosis. The pulp most often shows a simple hyperplasia, and only in a proportion of the cases has there been noted any increase of endothelial cells. The liver presents no constant or characteristic change: and beyond some hyperplasia of the lymphoid elements there is nothing special to note on examination of the lymphatic glands. In the bone-marrow there is seen such hyperplasia as one meets with in any secondary anæmia or leucocytosis. In some cases there has been found a certain amount of myeloid transformation of the liver, spleen, and lymphatic glands, but it is doubtful if these cases are not, as suggested by Ledingham,¹ rather examples of leukæmia (leukanæmia) than of the typical infantile anæmia. In support of this view I would quote a case, reported by me two years ago,² of an infant, seven weeks old, who had most of the signs of an infantile splenic anæmia, and yet, on *post-mortem* examination proved to be a leukæmia.

If suitably treated the ordinary case of infantile splenic anæmia is readily curable, although the cure may be very slow. Death when it occurs is due most often to bronchopneumonia or some other complication. The enlargement of the spleen, however, may persist for a long time even after the anæmia has disappeared; or, again, the anæmia may persist, in varying degrees of intensity, for many years—for twenty years in one of my cases³—and yet there may be ultimate recovery, although the spleen usually remains enlarged.

It is difficult to determine what relationship a case of this sort has to the cases of splenic anæmia appearing in childhood (from 2 to 15 years of age), such, for example,

¹ Allbutt and Rolleston, *System of Medicine*, 1909, vol. v, p. 783.

² *Lancet*, 23rd January, 1909; Case 10.

³ *Ibid.*, Case 1.

as the two cases recorded by Dr. Cowan¹ in 1907. Possibly some of these latter are cases of infantile splenic anæmia where the splenic enlargement and anæmia had not been previously noted, and others may belong to the Gaucher type of splenic anæmia already referred to. On all these points, however, fuller information is required.

Finally, it is to be noted that in five cases of infantile splenic anæmia occurring in Naples and three in Tunis,² an organism similar to the Leishman-Donovan body has been found, and this suggests that in these cases the anæmia and splenomegaly have a common origin with the kala-azar of the adult.

Pernicious anæmia.—This anæmia we must consider with rather more detail, for there is some difference of opinion as to what constitutes pernicious anæmia, as well as regards its etiology and pathogenesis.

But neglecting for the moment such a consideration, and using the term in a general way, one might describe pernicious anæmia as a severe and progressive anæmia, insidious in onset, and showing usually one or more striking remissions, but ultimately going on to a fatal termination; as being more common in men than in women, and much more common after than before 35 years of age. Characteristic blood changes are also present, there being great diminution in the number of the red corpuscles (2,000,000, or less, per c.mm.), high hæmoglobin index, absence of leucocytosis, and the presence of a considerable proportion of megalocytes, and possibly some megaloblasts. On *post-mortem* examination the two outstanding changes met with are (1) the great excess of iron (hæmosiderin) in the liver, and, to a less extent, in the kidneys, spleen, and marrow, and (2) the hyperplasia of red bone-marrow, this growth being, in part at least, megaloblastic in type. A description such as this, I take it, will be accepted by most hæmatologists as a sufficiently accurate characterisation of at least the average case of pernicious anæmia.

Now, it is not disputed that the anæmia is due to an abnormal destruction of red corpuscles which has been going on in some part of the circulation, nor is there any doubt that the increase of iron in the liver is the result of this hæmolysis. It is also recognised that it is the large proportion of megalocytes that determines the high

¹ *Quarterly Journal of Medicine*, October, 1907.

² Quoted by Ledingham, *ibid.*, p. 785.

hæmoglobin index, and that the megalocytes, in turn, are derived from the megaloblastic marrow. So far, there is fairly general agreement: but when we come to inquire into the relationship of the hæmolysis to this megaloblastic marrow we find ourselves in the midst of an active controversy. Briefly, the main dispute is as to which of these two morbid processes is primary, as to whether the disease begins as a hæmolysis or as a megaloblastic degeneration of the bone-marrow.

The former view is the older one, and it was formulated by William Hunter more than twenty years ago. According to this theory a hæmolytic toxin is elaborated in some part of the alimentary tract, from whence it passes into the portal circulation, producing there a great destruction of red corpuscles. The iron pigment liberated from the corpuscles is then carried to the liver and stored up in the liver cells, giving the hæmosiderin reaction which Hunter regards as pathognomonic of Addisonian anæmia. The hæmolytic toxin he regards as a specific substance, and in its origin closely associated with an inflammation of the tongue and similar lesions which he finds *post-mortem* in the gastric and intestinal mucous membranes.

Hunter finds glossitis as an early symptom in all his cases. Sometimes it is acute, sometimes chronic and degenerative in character; but when once contracted it is exceedingly difficult to cure. He finds, too, that an exacerbation of the glossitis is frequently the forerunner of a period of increased hæmolysis. Further, this hæmolytic toxin, he says, has a distinctly stimulating action on the bone-marrow, and the hyperplasia of the marrow he regards as compensatory and secondary to the destruction of red corpuscles.

Besides this, he draws a definite distinction between Addisonian anæmia and what he calls septic anæmia, the form of secondary anæmia which clinically resembles most closely Addisonian anæmia. In septic anæmia there is often an oral sepsis, but no hæmolysis confined to the portal area, and no excess of iron in the liver. In this anæmia, too, the septic toxin has an aplastic rather than a hyperplastic action on the bone-marrow. Glossitis is absent in septic anæmia. But these two forms of anæmia may run concurrently in the same patient, and the great improvement which sometimes takes place on curing the oral sepsis is due to the removal of the septic anæmia with its inhibitory action on the marrow. The removal

of the oral sepsis does not cure the glossitis, and, therefore, does not cure the Addisonian anæmia: but, on the other hand, the oral sepsis is favourable to the development of the glossitis and the other lesions of the alimentary tract with which Hunter associates the production of the specific hæmolytic toxin.

The other theory¹ in regard to the production of pernicious anæmia is to the effect that a toxin is produced in some part of the body, not necessarily the digestive tract, and that it acts primarily on the marrow, producing a megaloblastic rather than a normoblastic hyperplasia. The result of this megaloblastic marrow is that immature and ill-formed red cells are sent into the circulation, and these being more vulnerable than normal corpuscles there is increased hæmolysis. The evidence of this hæmolysis is said to be widespread, and not limited to the portal area.

Both theories, therefore, recognise the action of a toxin, and both recognise a hæmolysis: but the first theory maintains that the toxin acts primarily as a hæmolytic agent, whilst the second takes the view that its initial action is to produce a megaloblastic marrow. The point at issue may not seem of very great consequence: but the view one takes as to the essential lesion in pernicious anæmia makes a considerable difference in the grouping of the various cases that may present themselves for consideration. Most hæmatologists who accept the first theory seem to regard pernicious anæmia as a specific disease, caused by a specific toxin, and they would include only the cryptogenic cases under the term, *i.e.*, the cases that Hunter would call Addisonian anæmia. Most of those who accept the second theory seem to regard pernicious anæmia as a group of symptoms resulting from various causes, any of which will produce a megaloblastic marrow. According to this view, "pernicious anæmia" is much more comprehensive, and would not be a disease *sui generis*, although some writers seem to think that the toxin which produces the marrow change is a specific poison.

But let us consider some of the arguments that have been advanced for and against these different views. We have seen that Hunter associates the origin of the toxin with certain lesions in the alimentary tract: his conclusions, however, are not generally accepted as proved. In not more than about 50 per cent of the cases collected by the

¹ See, for example, paper by Gulland and Goodall, *Journal of Pathology and Bacteriology*, January, 1905.

various writers on the subject has there been evidence of sore tongue, or sickness, or vomiting. In 372 of Cabot's¹ collected cases careful enquiry was made regarding the state of the mouth and tongue, and in only 42 per cent was there any evidence of a lesion in the buccal mucous membrane. And it is always to be remembered that the alimentary disturbances may be the result of the treatment with arsenic, or may be secondary to the anæmic condition instead of the cause of it.

Hunter insists that the glossitis is an initial symptom: but this must be difficult to determine, for pernicious anæmia is so essentially insidious in its onset that one almost never sees a case in the initial stage of the disease. Indeed, in the majority of cases there is an anæmia of about 2,000,000 red corpuscles per c.mm. before the patient presents himself for diagnosis and treatment.

But apart from the attacks of vomiting and diarrhoea which a proportion of the cases complain of, and which are often paroxysmal in character, the digestive tract presents little evidence of disease. The appetite may be poor, but the digestion is usually good, and the absorption of proteins, carbohydrates, and fats shows little abnormality. There is seldom excess of ammonia or sulphates in the urine, such as would suggest undue intestinal putrefaction. *Post-mortem*, too, no constant or specific lesion is to be found in the mouth, stomach, or intestine—at least, judging from the majority of recorded cases: and any such lesion as is found might equally well be secondary to the toxæmia and general anæmia.

But the alimentary tract has been claimed to be the seat of origin of the toxin because hæmolysis is said to take place in the portal area, and the amount of iron pigment in the liver is reckoned the measure of the hæmolysis that has taken place. There is no doubt of the great increase of the iron in the liver in all the Addisonian cases of pernicious anæmia. In the normal liver there is about 0.09 per cent of iron, whilst in pernicious anæmia it may be over 1 per cent. The iron in the liver, however, may be increased in any condition in which there is increased destruction of blood corpuscles, as, for example, in pyæmia: but the increase of iron is much greater and much more constant in pernicious anæmia than in any other disease.

There is also increase of iron in the urine, in the kidneys, and in the spleen in many of the Addisonian cases. In the

¹ Osler and McCrac's *System of Medicine*, vol. iv, p. 622.

urine the iron may be three to four times as much as in health. In the kidneys there is normally 0·01 per cent of iron, but in pernicious anæmia there may be as much as 0·09 per cent. The spleen in health contains about 0·18 per cent, but in pernicious anæmia it may be up to 0·3 per cent.¹

But whilst increase of iron means increased hæmolysis, it does not necessarily mean that it is due to a toxin passing from the alimentary tract into the portal circulation. It is known that changes similar to those met with in pernicious anæmia, *i.e.*, hæmosiderin in the liver and a megaloblastic marrow, can be produced by certain hæmolytic drugs (ricin, saponin) injected into the general circulation; so that there is no good reason for insisting that the excess of iron in the liver means a toxin more or less limited to the portal area. Besides this, we sometimes find cases of anæmia with what seems to be a toxic degeneration in the spinal cord, and which show symptoms of the spinal disease prior to the anæmia. Dr. Byrom Bramwell² has recently reported such a case where the spinal symptoms were present long before there was any appearance of the anæmia which ultimately developed, and which clinically and on *post-mortem* examination had all the features of a typical Addisonian anæmia. If this spinal lesion is produced by the same toxin as the anæmia, it is apparent that the toxin has been acting on the tissues of the general circulation before it has shown much effect on the blood in the portal area. Dr. Bramwell's case, too, may be quoted as an argument against the view that combined degeneration of the cord in pernicious anæmia is due to the anæmia. But, on the other hand, we cannot insist that the degeneration is produced by a specific toxin, for the degeneration is also met with in severe secondary anæmias as well as in leukæmia.

McNeil³ has shown that the blood serum from the nine cases of pernicious anæmia examined by him had no hæmolytic action on washed red corpuscles: and Cabot suggests that the toxin of pernicious anæmia does not act directly

¹ It is to be noted in passing that the intensity of the ferrocyanide test for iron pigment is not necessarily in proportion to the amount of iron present in these tissues. This reaction, if positive, indicates an excess of iron, but it specially indicates that the iron is present in such simple form as to respond to ordinary chemical tests.

² *British Medical Journal*, 11th June, 1910.

³ *Journal of Pathology and Bacteriology*, July, 1910, p. 64.

as a hæmolytic agent, but that it stimulates to an excessive activity the hæmolysis that normally goes on in the spleen, hæmolymp glands, and bone-marrow, and that the iron liberated is changed into hæmosiderin in the liver and kidneys. Iron in any case is normally stored by the liver as well as by the spleen and bone-marrow; and it is reasonable to think that with excessive hæmolysis there should be an excessive amount of iron in the liver and these other organs. Pathologists are not agreed as to whether or not hæmolysis actually takes place in the liver itself in pernicious anæmia.

Still another view regarding the excess of iron in the liver is that of Professor Stockman. He holds that pernicious anæmia is due to multiple small hæmorrhages, and that the excess of iron pigment is derived from the extravasated blood. Pernicious anæmia would thus be a severer form of secondary anæmia in which hæmorrhages had occurred.

Most of these theories, then, presuppose a toxin in some part of the circulation, but whether or not the toxin comes from the alimentary tract is not certainly determined. And the excessive amount of iron in the liver indicates an excessive liberation of hæmoglobin. This may result from extravasation of blood: from increased hæmolysis going on in the general circulation, or in the portal circulation, or as an increased activity of the ordinary hæmolytic apparatus—all the result of some toxic agent: or, finally, the hæmolysis may depend on the marrow sending into the circulation immature red cells, which are possibly of little use to the organism, and are, therefore, quickly removed and broken up.

As to the bone-marrow in pernicious anæmia, there is little doubt that in the vast majority of cases it shows an active hyperplasia. The type of hyperplasia, however, varies considerably in the different cases. In some, the marrow is largely erythroblastic, much of which may be megaloblastic in its type of growth. In a larger number of other cases there is a great increase of the leucoblastic elements, and in many of the cases the white cells in the marrow are not only absolutely but also relatively increased. The increase in some cases seems to affect chiefly lymphocyte-like cells: in others, the myelocytes: and yet in others, again, both these types of cell about equally. But in spite of this leucoblastic overgrowth in the marrow, there is a lessened number of white cells in the circulation.

The number of the lymphocytes in the blood is little altered, although they are relatively increased, but the polynuclear cells are both absolutely and relatively diminished.

Now, we have seen that different interpretations are given to these changes in the marrow. According to one view (Ehrlich, Gulland, Ewing), the megaloblastic marrow is the primary and one constant lesion in pernicious anæmia. Ehrlich holds that megaloblasts constitute a separate type of cell from the normoblast, and that megaloblasts are not present in normal marrow. The appearance of megaloblasts in the marrow is therefore an expression of a preversion of the function of the bone-marrow. According to the other view (Hunter, Cabot, Buntin), the changes in the marrow are the result rather than the cause of the anæmia, and they indicate an over-activity of the bone-marrow in attempting to repair the anæmia, such an over-activity resulting in the marrow reverting to its embryonic (megaloblastic) type of growth. In this way the megaloblast would appear to be simply a less mature form of normoblast, with which it is said to be connected by several intermediate forms.

The chief argument advanced in favour of the second theory is the observation of Buntin that small doses of the hæmolytic drug, ricin, given over a considerable period, produces a megaloblastic marrow identical with that found in pernicious anæmia, whilst larger doses, given for a shorter time, produce a normoblastic marrow—that is to say, the marrow is megaloblastic or normoblastic according to the duration of the hæmolysis. If the megaloblastic marrow were a response to a specific toxin, the type of marrow should not have varied with the size of the dose.

The fact that megaloblasts very readily appear in the blood in the anæmias of infancy, and the more readily the profounder the anæmia, suggests that it is the excessive drain on the marrow that causes the reversion to this type of marrow growth. Also, the reaction in the marrow in pernicious anæmia cannot strictly be regarded as specific, for, as we have seen, in many of the cases the hyperplasia of the leucoblastic elements is greater than that of the erythroblastic.

Warthin¹ has reported an interesting case of fatal hæmorrhagic anæmia in the adult, the patient bleeding from a nasal "angiectatic polyp" almost continuously for

¹ *Trans. Assoc. Amer. Physicians*, vol. xxiv, p. 227.

three weeks. There were large numbers of megaloblasts in the blood, and *post-mortem* examination showed a megaloblastic marrow. If in this case all primary blood diseases can be certainly excluded, and this seems to be so, it is strong evidence in favour of the view that a megaloblastic marrow can be produced without the intervention of a specific toxin, and simply as the result of an excessive demand for red blood corpuscles.

Besides this, there seems to be no conclusive evidence of increased fragility of the red corpuscles in pernicious anæmia. The resistance of these cells to various strengths of saline solutions seems to be little different from normal, and McNeil¹ has recently shown that their resistance to saponin hæmolysis, at least in the chronic cases, is very little diminished—indeed, it is much greater than the resistance of the red cells in certain cases of jaundice in which there was no anæmia.

Fuller information, however, is required regarding the relationship of megaloblastic and normoblastic marrow, and regarding the relationship of both to the various types of anæmia.

It is thus apparent that in studying the pathological anatomy of pernicious anæmia it is exceedingly difficult to find any uniformity of opinion as to what constitutes the essential lesion in the disease. And, on the clinical side, it is equally difficult to get agreement as to what are the symptoms and signs on which one may found a diagnosis. If we define pernicious anæmia as a profound anæmia with high colour index and megalocytes and megaloblasts in the blood, then we include anæmias produced by apparently many quite different causes. If to the above definition we add that the anæmia must be cryptogenic in origin, the disease becomes much more restricted, and embraces only such anæmias as have no recognisable etiology. So that, till agreement as to what shall constitute the boundaries of "pernicious anæmia" is arrived at, it will be convenient to group the cases of profound anæmia according to their apparent, or their possible, etiology. This will give us the following groups:—

Group I.—Addisonian anæmia, and, according to many writers, it is the only true pernicious anæmia. Here there is no obvious explanation for the anæmia. Such cases

¹ *Journal of Pathology and Bacteriology*, July, 1910.

almost invariably have great increase of iron in the liver as well as a megaloblastic marrow.

Group II.—Cases in which the anæmia seemed to begin during pregnancy or soon after childbirth. Cabot suggests that the anæmia is due to an auto-intoxication, evidence of which is not infrequently met with in pregnancy in the form of nephritis, eclampsia, or obstinate vomiting. The pregnancy cases differ from the Addisonian cases in that whilst the latter are met with more often in men, and more often after 35 years of age, the former are all in women, and usually in those under 35 years. The pregnancy anæmias are more definitely progressive, and seldom show the characteristic remissions of the Addisonian cases; but the possibility of cure in this group of cases seems less remote than in those of Group I.

Group III.—Cases in which the anæmia seems to date from one or several hæmorrhages, and yet in which the anæmia is quite out of proportion to the amount of blood lost. Many of these cases may be Addisonian cases with insidious onset, in which the hæmorrhage is a result of the anæmia and not its cause. But, on the other hand, it is to be remembered that Professor Stockman regards all cases of pernicious anæmia as due to repeated hæmorrhages, and it is these hæmorrhages, he says, that convert a simple anæmia into a pernicious one.

Group IV.—Cases in which the anæmia is associated with cancer of the stomach. A secondary anæmia is an almost constant accompaniment of any cancer; but in cases of cancer of the stomach the anæmia may be unusually profound, and in some rare instances it has the characters of a pernicious rather than of a secondary anæmia. There is some doubt, however, if the tumour growth in these cases has any causal relationship to the anæmia.

In some of the cancer cases secondary growths have been found in the bone-marrow, inducing a certain amount of megaloblastic change in the marrow, and the appearance of megalocytes, megaloblasts, and myelocytes in the blood. Drs. Harrington and Teacher reported a case of this sort at a meeting of the Medico-Chirurgical Society last winter, and they refer in their paper¹ to several

¹ *Glasgow Medical Journal*, April, 1910.

other published cases. The anæmia in these cases may be, in part at least, aplastic, that is, due to displacement of marrow by the tumour growth. And the megaloblastic change of the remaining marrow may either be secondary to the anæmia, or, as Ehrlich suggests, due to toxins derived from the tumour acting on the marrow cells and inducing a megaloblastic degeneration. The hæmosiderin reaction in the liver in most of these cases seems to be very slight, if present at all.

Group V.—Cases in which an intestinal parasite is the apparent cause of the anæmia. The two intestinal parasites that produce the most profound anæmia are (1) *bothriocephalus latus* and (2) *ankylostoma duodenale*. From each of these worms a toxin has been recovered which has a definitely hæmolytic action on red corpuscles, and the anæmia they produce is almost certainly, in great part at least, toxic in origin.

With both these worms the anæmia may be secondary in type, but with *bothriocephalus latus* especially it is not uncommon to find the blood with a high colour index, and with megalocytes and megaloblasts also present. The course of the anæmia, too, is progressive and fatal unless the worm be removed.

In cases dying with *bothriocephalus* anæmia the marrow may be found to be megaloblastic in type, and in some cases at least the iron pigment in the liver has been increased in amount.

The vast majority of cases of *ankylostomiasis* have a low hæmoglobin index. But certain cases, on the other hand, are reported as having a high index, and otherwise have a blood picture very like that of an Addisonian anæmia. In some of the fatal cases excess of iron has been found in the liver: in others the iron does not exceed the normal.

In *bothriocephalus* anæmia, but more especially in *ankylostomiasis*, an excess of eosinophile cells is met with in the blood, and this helps to differentiate an anæmia due to intestinal worms.

Group VI.—*Aplastic anæmia.* This is a profound anæmia in which, instead of there being a hyperplasia of the bone-marrow, there is atrophy of the normally active marrow. The cases are somewhat rare, and differ clinically in certain points from Addisonian anæmia. Aplastic anæmia is more common in women than in men—two-thirds of

Cabot's cases being women, and three-fourths of the cases were under 34 years of age. The course of the illness, too, is more acute, and it is progressive without remissions. Subcutaneous hæmorrhage and hæmorrhages from the mucous membranes are much more common than in the typical pernicious anæmia. Also, the blood is different. The hæmoglobin index varies, but it may be low; usually there is little poikilocytosis, anisocytosis, or polychromatophilia, and usually no nucleated red corpuscles. There is a leucopenia with a high percentage of lymphocytes (80 to 90 per cent). On *post-mortem* examination the red marrow is found to be less extensive than normal, and to be undergoing a fatty degeneration.

It is difficult to be certain whether this is a pernicious anæmia of toxic origin in which the marrow has failed to react, or an anæmia secondary to the inactivity and atrophy of the blood-forming tissue. We have already seen that a drug like arsenic in small doses stimulates the bone-marrow to greater activity, whereas in large doses it has an inhibitory and degenerative action. It may be that there is a toxin in this disease with a similar action to the large doses of arsenic. In 1900 Professor Muir¹ described a case with the characters of aplastic anæmia, and he then expressed the opinion that the marrow change was a primary one. In this case there was an increase of iron pigment both in the liver and kidneys, but this he regards, not as evidence of hæmolysis, but as resulting from the somewhat extensive hæmorrhages that were present in the tissues. In a somewhat similar case, recorded by Drs. James Carslaw and Shaw Dunn,² there was only a very slight deposit of hæmosiderin in the liver, but here there was but little extravasation of blood into the tissues. The marrow in this case was aplastic, except for a very few nodules which showed a megaloblastic activity.

*Group VII.—Acquired hæmolytic ictero-anæmia: Widal's syndrome.*³ As the blood picture in Widal's cases of ictero-anæmia has a considerable resemblance to that in pernicious anæmia, it is convenient to group them along with the

¹ *British Medical Journal*, 29th September, 1900.

² *Glasgow Medical Journal*, May, 1910. A somewhat similar case to this is recorded by Professor McWeeney in the *Journal of Pathology and Bacteriology*, July, 1909.

³ See paper by Barton, *Amer. Journ. of Med. Sciences*, August, 1910.

foregoing cases. The general course of this illness, however, is much less severe than in pernicious anæmia, and, indeed, ictero-anæmia seems to be never fatal. Nine cases have been recorded—six in females and three in males, with ages ranging from 16 to 67 years. The disease begins insidiously without any very apparent cause. There is first general weakness, and then the pallor and yellow discolouration of conjunctivæ, skin, and mucous membrane appear. But there is no itching of the skin and no bradycardia. The motions are normal in colour. Although the urine contains excess of urobilin, there is no appearance of bile pigments. The blood-count during an exacerbation of the disease shows the red corpuscles ranging from 1,000,000 to 3,000,000 per c.mm., and with high colour index. There is poikilocytosis, anisocytosis, and polychromatophilia: nucleated red cells may form 5 per cent of all the red corpuscles, and both megaloblasts and normoblasts are represented. There seems to be usually a leucocytosis, but the counts have ranged from 4,500 to 40,000 white cells per c.mm. Neutrophile myelocytes are occasionally present. The coagulation time of the blood is normal, and the blood plasma is not unduly hæmolytic. The red corpuscles, however, show lessened resistance, as tested by varying strengths of saline solutions.

There is in every case some enlargement of the spleen, and its size seems to vary with the exacerbations and improvements which are characteristic of the course of the disease. The liver is sometimes enlarged. The illness tends to become chronic, and has a very variable duration, ranging from a week to several years. There has been one death in the nine cases recorded, and this patient died of an intercurrent pneumonia. On *post-mortem* examination there was found excess of pigment in the liver, and a megaloblastic hyperplasia of the bone-marrow.

The primary lesion in the disease is supposed to be the undue fragility of the red corpuscles, leading to increased destruction of these cells, and associated with this is the enlargement of the spleen and pigmentation of the tissues. Barton believes the pigment to be formed in the blood and not in the liver, and he says that the condition differs from pernicious anæmia in that in the latter disease, as well as in jaundice, there is no increased fragility of the red corpuscles.

A congenital form of ictero-anæmia has been described

under the titles *Congenital family cholæmia*¹ and *Congenital anæmia, with jaundice and enlargement of the spleen*,² but the symptoms in the acquired and congenital forms are practically the same. In the congenital form, however, the disease tends to affect several members in a family, and often several members in successive generations. The jaundice and anæmia date from before or soon after birth. The jaundice is essentially chronic, and may persist till middle life. The anæmia is usually less marked than in the acquired variety, and the hæmoglobin index in the majority of cases is lower than normal. There are almost always some normoblasts, megaloblasts, and myelocytes found in the films, but in the most of the cases there is a leucopenia—Buchan and Comrie's cases being an exception. There is the same enlargement of the spleen and absence of bile from the urine (except in Buchan and Comrie's cases), although bile has been found in the blood plasma in the majority of cases. The motions remain normal.

The general health, as a rule, seems to be little affected, but Buchan and Comrie record the death of three cases which lived two, three, and seven days respectively. *Post-mortem* they found signs of biliary obstruction in the liver, but no hæmosiderin reaction in this organ, although it was present in the spleen. In both liver and bone-marrow there was evidence of increased megaloblastic activity.

As in the acquired, so in the congenital, form of acholuric jaundice, the increased fragility of the red corpuscles seems to be the most apparent cause of the anæmia. This fragility leads to increased destruction of these cells in the spleen, and gives rise to the hæmosiderin reaction in that organ. The increased fragility may depend on defective formation of red cells, and it may be that the primitive type of marrow persisting too long in part accounts for this by producing cells less mature, and, therefore, with less resistance. The jaundice is doubtless hæmolytic in origin, the products of hæmolysis possibly producing some catarrhal obstruction in the biliary ducts.

¹ Hawkins and Dudgeon, *Quarterly Journ. of Medicine*, January, 1909; and Hutchison and Panton, *ibid.*, July, 1909.

² Buchan and Comrie, *Journal of Pathology and Bacteriology*, vol. xxii, 1909.

SOME CASES RESEMBLING ATROPHY OF THE OPTIC NERVES WHICH RECOVER UNDER TREATMENT.

BY LESLIE BUCHANAN, M.D.,
Surgeon, Glasgow Eye Infirmary.

DURING the past six or eight years I have seen at the clinique of the Eye Infirmary quite a considerable number of patients who presented many of the symptoms of atrophy of the optic nerves, but who have, fortunately, recovered the visual power fully both as regards central and peripheral vision. As this condition of matters appears to be fairly frequent, although not as yet thoroughly understood, I give here a brief *résumé* of a few cases of this kind.

So far as I can recollect, all the patients have been males between 30 and 50 years of age, and all have been steady, healthy-looking men, who are working in responsible positions. None of the patients exhibited the signs or symptoms of toxic amblyopia: none were addicted to the overuse of either alcohol or tobacco: and none complained of, or exhibited evidences of, either digestive derangement, kidney disease, or syphilis.

In each case the complaint was of slowly increasing defect of vision both for near and for distant work, without any head pain or other evidence to lead to a definite cause. Several of the men were in employment where form and colour vision is tested from time to time, such as railwaymen, postal servants, ship's officers, &c., and there can be no doubt that the diminution of vision must have been of recent origin in several.

The symptoms have been diminution of central vision—both form and, less markedly, colour—and peripheral contraction of the visual field, generally symmetrical. The optic nerves presented the appearance of early atrophy, pallor, and sharp outline, without diminution of the calibre of the central vessels.

In none of the patients was there any evidence of nervous disorder, and the subsequent history of such of the cases as I have been able to watch for one, two, three, or more years has proved that the disease was not due to advancing sclerosis of brain or spinal cord.

Examination of the urine showed that there was no disease of the kidneys, and, indeed, careful enquiry failed altogether to show any point from which toxic influences could start.

I choose three cases here for recital because they have been followed out for several years, and show that there is no tendency to relapse after treatment has been stopped, in spite of the fact that the same calling has been pursued since that time.

In no case could any history of similar disease of the eyes in other members of the family be traced, so that one may conclude that the disease is not conspicuously a form of family degeneration.

It is, then, manifest that some cause of obscure nature must have been at work in these patients, and it is to be presumed that it was toxic in nature.

The appearance of the optic nerves and the history of the cases indicate that it was not overuse of the eyes, and there was not the least indication to show that there was in any case an attempt at malingering, as most of the men continued at work during the entire time they were under supervision. There was no evidence of hysterical influence in any case.

The treatment in all cases has been purely medicinal—either tincture of nux vomica or strychnine combined with iodide of potassium, in doses of each which were moderate at first, but later increased to full.

In general, no benefit was experienced until a month or two had elapsed, and then it was low but steady for about a year.

Treatment was kept up until the visual acuity and the field of vision ceased to improve.

In general, no improvement or alteration of the appearance of the optic nerve was seen, the size, outline, and hue remaining much as at first. No diminution of calibre of the vessels was seen in any case.

The question comes up here, then, Are these cases of ordinary atrophy of the nerves which have been taken in time and prevented from reaching a stage at which treatment is of no avail? or are they a special class of case which would be amenable to treatment at any stage? My impression is that, taking the symptoms into account, one must conclude that they are ordinary cases which are stopped, and which improve by treatment.

It is specially interesting to find that the visual field has improved *pari passu* with the form vision, and to almost perfect size.

CASE I.—J. S., postal official, æt. 33, a tall, healthy, active man, of bright, intelligent appearance, was first seen on 30th

September, 1904, complaining of progressive diminution of vision. He is a total abstainer, and smokes (mostly out of doors) 2 oz. per week. Vision has been failing for a year. General state excellent.

Visual acuity.—Right, $\frac{1.5}{60}$; left, $\frac{2}{60}$; colours all slightly deficient.

Visual fields.—Right: temp., 50; sup., 40; nas., 35; inf., 55. Left: temp., 70; sup., 30; nas., 40; inf., 60.

Ophthalmoscopic examination.—Both eyes, optic nerves pale, sharply outlined, and hollow. Vessels of good size. No other change.

Treatment.—Nux vomica and potassium iodide.

11th November, 1904.—*Visual acuity*: right, $\frac{2.0}{60}$; left, $\frac{2}{60}$.

Visual fields.—Right: temp., 80; sup., 40; nas., 35; inf., 60. Left: temp., 85; sup., 45; nas., 55; inf., 65.

30th June, 1905.—*Visual acuity*: both eyes, $\frac{2}{5}$.

Visual fields practically full.

Treatment stopped at this date.

7th April, 1908.—Seen again on account of simple conjunctivitis.

Visual acuity.—Both eyes, $\frac{2}{18}$.

Visual fields perfectly full.

CASE II.—R. A., railway porter, æt. 50, seen first on 9th July, 1907, complaining of a "mistiness before the eyes" and inability to read, of three months' duration. Is very temperate in the matter of tobacco and alcohol. General character, from the railway, excellent, and health perfect.

Visual acuity.—Right, $\frac{2}{6}$; left, $\frac{2}{5}$. Colours fairly good.

Visual fields.—Right: temp., 35; sup., 20; nas., 30; inf., 25. Left: temp., 35; sup., 25; nas., 35; inf., 25.

Ophthalmoscopic examination.—Both eyes, optic nerves small and sharply outlined, slightly hollow, and pinkish in colour.

Ordered nux vomica and potassium iodide.

20th August, 1907.—*Visual acuity*: right, $\frac{2}{5}$; left, $\frac{2}{6}$. Fields distinctly improved.

15th November, 1907.—*Visual acuity*: right and left, $\frac{2}{5}$.

26th February, 1909.—*Visual acuity*: both eyes, $\frac{2}{12}$, and visual fields full in each for the last six months.

Treatment stopped.

CASE III.—J. M.M., railway enginedriver, æt. 40, first seen on 12th March, 1907, complaining of dimness of vision, which was gradually getting worse, for the last three months. Both

eyes were affected. He is a very temperate man as regards both tobacco and alcohol, and has an excellent character from the railway.

Visual acuity.—Right, $\frac{2}{70}$; left, $\frac{2}{55}$.

Visual fields.—Right: temp., 40; sup., 20; nas., 35; inf., 35. Left: temp., 50; sup., 25; nas., 40; inf., 40.

Ophthalmoscopic examination.—Both eyes, slightly hyperopic. Optic nerves small and pale. Central vessels of fairly good calibre, veins possibly a little congested. Ordered liq. strychnine and potassium iodide.

No improvement was noted for nearly two months.

12th May, 1907.—*Visual acuity*: right, $\frac{2}{55}$; left, $\frac{2}{50}$.

Visual fields.—Right: temp., 65; sup., 25; nas., 45; inf., 50. Left: temp., 65; sup., 40; nas., 50; inf., 55.

11th June, 1907.—*Visual acuity*: right, $\frac{2}{45}$; left, $\frac{2}{40}$. Visual fields further enlarged.

2nd August, 1907.—Has passed the railway test of vision to-day.

Visual acuity.—Right, $\frac{2}{55}$; left, $\frac{2}{50}$. Visual fields still improving.

10th December, 1907.—*Visual acuity*: right, $\frac{2}{55}$; left, $\frac{2}{52}$.

12th June, 1908.—*Visual acuity*: right, $\frac{2}{52}$; left, $\frac{2}{50}$. Visual fields nearly full now.

Treatment stopped.

20th November, 1909.—Visual acuity perfect and fields quite full now.

Obituary.

DAVID COUPER, M.D.

By the death of Dr. David Couper, which occurred on 4th January, with great suddenness, the Dennistoun district of the city has lost a well-known practitioner.

Dr. Couper graduated M.B., C.M. Glasg., in 1881, and M.D. in 1883, and had been for many years in practice in Dennistoun, of which district he was Parochial Medical Officer and Public Vaccinator. He devoted special attention to diseases of the skin, and for several years held the post of physician in this department of the Victoria Infirmary and of the Central Dispensary. He contributed from time to time to

the medical periodicals articles on dermatological subjects. He took a prominent place in the Southern and the Eastern Medical Societies, in both of which he formerly held the office of President. His health had of late caused his friends some anxiety, but the suddenness of his death came rather as a surprise.

Always brisk in his movements, he managed to get through a large amount of professional work, and his cheerful manner and shrewd native wit were much appreciated by a wide circle of patients.

He is survived by a widow and a family, of whom a son is a member of the profession, and at present a Demonstrator of Anatomy in the University.

WILLIAM FLETCHER KAY, M.D.

WE regret to announce the sudden death from cholera, on 3rd January, of Dr. William Fletcher Kay.

Dr. Kay graduated M.B., Ch.B.Glasg., in 1902, and M.D. in 1905. He was formerly an assistant physician at Ruchill Fever Hospital, but had gone to Owaz, Persia, at which place he died.

JOHN COOMBE MADDEVER, M.D. GLASG.,
BROWNHILLS, WALSALL.

WE have just learned of the sudden death of Dr. John Combe Maddever, of Brownhills, Walsall, in his sixty-second year. Dr. Maddever graduated M.B., C.M.Glasg., in 1872, and M.D. two years later. At the time of his death he was senior surgeon to the Hammerwich Hospital, and medical officer of health of the Brownhills Urban District of Walsall.

CURRENT TOPICS.

APPOINTMENTS.—*University Examinerships*: Professor C. S. Sherrington, M.D., Liverpool, has been appointed additional Examiner in Physiology; Wm. MacLennan, M.B., C.M., in Medicine (Systematic and Clinical); and Henry Rutherford, M.A., M.B., C.M., in Surgery (Systematic and Clinical).

Samaritan Hospital: David Shannon, M.B., Ch.B.Glasg. (1901), has been appointed Visiting Surgeon *vice* Dr. George Halket, Visiting Physician, resigned. John Graham, B.Sc., M.B., Ch.B.Glasg. (1904), has been appointed Assistant Surgeon *vice* D. Shannon, M.B., promoted.

MATRICULATED STUDENTS AT GLASGOW AND EDINBURGH: TWENTY-TWO YEARS' STATISTICS.—The following is a statement of the numbers of matriculated students at Glasgow University for the past twenty-two years:—

Year.	Arts.	Science.	Divinity.	Law.	Medicine.	Total.
1889, . . .	996	—	95	192	818	2,101
1890, . . .	998	—	88	197	770	2,053
1891, . . .	972	—	93	206	820	2,091
1892, . . .	941	—	89	205	760	1,995
1893, . . .	780	129	90	193	695	1,887
1894, . . .	677	119	71	186	618	1,671
1895, . . .	611	113	61	182	617	1,584
1896, . . .	571	123	62	225	621	1,602
1897, . . .	587	112	58	211	565	1,533
1898, . . .	634	147	54	215	557	1,607
1899, . . .	654	166	41	213	590	1,664
1900, . . .	673	160	41	200	584	1,658
1901, . . .	661	183	51	196	588	1,679
1902, . . .	687	198	53	191	642	1,771
1903, . . .	681	238	49	193	604	1,765
1904, . . .	688	248	51	187	639	1,813
1905, . . .	684	248	43	208	645	1,828
1906, . . .	700	274	56	203	626	1,859
1907, . . .	688	321	59	234	622	1,924
1908, . . .	695	347	60	214	606	1,922
1909, . . .	727	428	60	203	602	2,020
1910, . . .	754	421	56	176	618	2,025

Increase from 1909, 5, made up of 27 Arts, 16 Medicine—43; less decrease of 7 Science, 4 Divinity, 27 Law—38. Net diminution during the twenty-two years, 76, made up of 242 Arts, 39 Divinity, 16 Law, 200 Medicine—497: less students in Science—421.

The corresponding figures for Edinburgh University are as follows:—

Year.	Arts.	Science.	Divinity.	Law.	Music.	Medicine.	Total.
1889,	981	—	124	472	—	2,025	3,602
1890,	940	—	116	468	—	1,979	3,503
1891,	942	—	88	485	—	1,839	3,354
1892,	881	—	82	460	—	1,715	3,138
1893,	738	156	79	452	—	1,641	3,066
1894,	639	150	68	454	4	1,494	2,809
1895,	550	132	71	438	3	1,475	2,669
1896,	572	145	62	439	4	1,415	2,637
1897,	586	149	60	390	5	1,417	2,607
1898,	627	142	63	373	16	1,381	2,602
1899,	626	173	47	368	5	1,390	2,609
1900,	627	158	40	348	4	1,325	2,502
1901,	658	163	29	402	6	1,399	2,657
1902,	610	194	40	386	6	1,381	2,617
1903,	610	232	50	352	9	1,437	2,690
1904,	592	224	47	341	8	1,476	2,688
1905,	646	281	52	320	6	1,475	2,780
1906,	611	281	56	311	12	1,465	2,736
1907,	620	275	63	301	6	1,423	2,688
1908,	651	279	62	301	9	1,431	2,733
1909,	704	325	48	281	11	1,359	2,728
1910,	728	363	43	250	9	1,349	2,742

Increase from 1909, 14, made up of 24 Arts, 38 Science—62; less decrease of 5 Divinity, 31 Law, 2 Music, 10 Medicine—48. Net diminution during the twenty-two years, 860, made up of 253 Arts, 81 Divinity, 222 Law, 676 Medicine—1,232: less students in Science 363, and students in Music 9—372. The above figures do not, in the case of either University, include students enrolled in single classes on payment of 5s. entrance fee, nor do they include women students. For the current session, 654 women (an increase of 23) are matriculated at Glasgow, and 624 (an increase of 30) at Edinburgh. The Faculty of Science, constituted in 1893, embraces students who in former years were included in Arts or Medicine, so that the diminution since 1893 in these faculties is not so great as might at first sight appear.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS.—At the monthly meeting of the Faculty on 9th ult., Mr. William Gilbert, M.B., Ch.B.Glasg., Provincial Hospital, Port Elizabeth, South Africa, was admitted *in absentia* a Fellow of the Faculty *qua* Surgeon.

COMPLIMENTARY DINNER TO SIR DAVID M'VAIL.—Sir David M'Vail was entertained to dinner in the Windsor Hotel on 20th January. Dr. D. N. Knox, President of the Royal Faculty of Physicians and Surgeons, Glasgow, occupied the chair, and Mr. J. T. T. Brown and Dr. John Patrick acted as croupiers. Among others present were Sir John Batty Tuke, Sir John Ure Primrose, Professor Gray, Messrs Thomas Russell, D.L., David Murray, LL.D., Charles Russell, LL.D., George Neilson, LL.D., J. F. Orr, and James M'Farlane, Dr. John Barlow, Dr. J. C. M'Vail, Dr. James Adams, Dr. Norman Walker, Edinburgh, and Dr. J. W. B. Hodsdon, Edinburgh.

The Chairman proposed the toast of "Our Guest." After a tribute to his work as Professor of Physiology in Anderson's College, Dr. Knox said that their guest joined Dr. Ebenezer Duncan, Dr. Reid, and the speaker in forming the Western Medical School. There he taught systematic medicine until he was transferred to the Royal Infirmary and became the Professor of Clinical Medicine in St. Mungo's College. All this time Dr. M'Vail was thinking over the great question of medical reform, and the first intimation he gave to them on the subject was an introductory lecture he delivered in the Western Medical School on the teaching of medicine in Glasgow. It created considerable talk at the time, and immediately thereafter, in the early eighties, the great question of medical reform came before the Scottish universities. There were a good many Bills brought forward and dropped before the Bill of 1889 became a statute, and there was no doubt that it was to the skill, determination, and generalship of Dr. M'Vail that any benefit they had received from that Act was due. The affiliation clause of that Act was secured by Dr. M'Vail with the help, he thought, of Lord Rosebery. They were sorry that under the general clause there had been no affiliation in Glasgow, but he was glad to say that there was a chance of an affiliation taking place in the early future. He went on to refer to their guest's services as a member of the University Court and to the honour conferred upon him 15 or 16 years ago by his appointment as Crown representative for Scotland on the General Medical Council. All through his life Sir David M'Vail had shown the most abundant

energy and the highest intellectual ability, an ability which would have carried him to the top in almost any walk of life. In many respects he was a great controversialist. He was clear, logical, massive, and frequently pungent. As a speaker he was fearless and dramatic. In conclusion, the Chairman referred to the honour of knighthood conferred on Sir David, and asked the company to drink to his health and happiness, and wish him and Lady McVail long life to enjoy their honours.

Sir David McVail, who was warmly received, acknowledged the toast. He recalled the fact that he became a student in Glasgow in 1862, and referred to the great mortality in the hospitals in those days from blood poisoning following on the carrying out of operations. Things were in a dreadful way surgically, and there were frequent epidemics of typhus. In the early sixties the death-rate was over 30 per 1,000. It was now half of that. He saw the beginning of the great changes which had brought about that result. In the Royal Infirmary at that time there were two men—Mr. Lister and Dr. Gairdner. He had the opportunity of seeing the beginning of Lister's work. Mr. Lister was a very young surgeon then, but he had been carefully investigating the coagulation of the blood. He was determined that matters should improve with regard to the healing of wounds. In the winter session of 1865-66 he gave them demonstrations in the old surgical theatre of the application of certain antiseptics—chloride of zinc was one of them—but the work done did not turn out as he hoped. All the time he was telling them of the wonderful experiments Pasteur in France had been making. The thing grew in Lister's mind all through that session, and at length in the month of May he was able to lay before them the essentials of his system of antiseptic surgery, and he began in that summer the first antiseptic operations, using carbolic acid. He remembered him bringing to the lecture-room, the first day on which he began to describe his experiments, a bottle of liquid. He said, "That is carbolic acid." Not one of them in that room until that day had ever heard the name of carbolic acid. Lister had many failures, but he was not discouraged. He went on devising new methods and new procedures, until finally he convinced the surgical world of the essential truths of his work, which had entirely transformed the whole system of the surgery of the world. It was something to be alive then, to be in that classroom, and to see the great master at work. Dr. Gairdner, afterwards Sir William Gairdner, was, he

thought, without exception the greatest medical teacher he had known. Largely by the efforts of those two men Glasgow had had a prime share in all the amelioration of surgical and medical work that the world now experienced. In conclusion, Sir David said that in so far as, in the teaching of medicine, he had been of use to any there, and some who were not there, he felt grateful that he should have been able to be of such service, and it was a great gratification that they had come there that night to congratulate him on the high honour the King had bestowed upon him.

Dr. John Patrick, on behalf of the house physicians and students of the Royal Infirmary, then presented Sir David McVail with a silver salver, candlestick, and flower vases in recognition of their high regard and to mark the honour conferred upon him.

FINAL YEAR MEDICAL DINNER.—The final year medical dinner was held in the St. Enoch Station Hotel on 18th ult., with Professor Murdoch Cameron in the chair. This dinner is one of the social events of the year when—as the menu had it—

“Teacher and taught, the plougher and the ploughed,
The lion and the lamb lie down together.
Fast fly the hours with laughter, long and loud,
Song, wine, and blether.”

The menu was as usual an elaborate affair, with photographs, autographs, and appropriate quotations for every member of the year, the guests also being neatly hit off. Nearly all the medical professors and many of the prominent Glasgow doctors were present. Professor Samson Gemmell, Regius Professor of Medicine, who proposed “The Year,” gave some interesting reminiscences of his early undergraduate days at the old College in High Street some forty years ago.

R.A.M.C. (T.), GLASGOW UNITS: ANNUAL GATHERING.—The annual gathering of the Glasgow Units of the Lowland Division R.A.M.C. (T.) took place on the evening of 23rd January, in the St. Andrew’s Halls.

The function took the form of a dance, and there was a large turnout of the members and of their friends. In the course of the evening the prizes gained during the past year were handed to the winners by Colonel Sir George Beatson, K.C.B., Administrative Medical Officer of the Lowland Division.

In the course of his remarks, Sir George referred to the fact that the Corps was at present at a strength of about 97 per cent of the establishment. Over 98 per cent of the members had attended the annual camp during 1910, a very creditable state of affairs. He mentioned that a staff officer had been appointed to assist him in his administrative work. The officer appointed, Major Erskine, R.A.M.C., was an old Glasgow graduate, and had come to him with a very high recommendation from the head of the Medical Department. He was glad to say, further, that sanction had been obtained for a drill hall for the Glasgow Units, that it was to be situated at Yorkhill, and that its construction would be immediately proceeded with, so that it would probably be ready for occupation in the course of the next seven or eight months.

TERRITORIAL ASSOCIATION AND HOSPITAL ACCOMMODATION.—We learn that Sir George Beatson, K.C.B., the Administrative Medical Officer for the Lowland Division of the Territorial Force, has been negotiating with the Glasgow Parish Council, with the result that the Council has agreed that, in the event of invasion, beds to the number of over five hundred will be set apart in Stobhill Hospital for the use of sick and wounded.

We have on previous occasions referred to the high official praise awarded to the Field Units of Sir George Beatson's command, and it is gratifying to know that the very important matter of hospital accommodation is also receiving his attention, with the above practical result.

ST. ANDREW'S AMBULANCE ASSOCIATION: TWENTY-SEVENTH ANNUAL REPORT.—The report was submitted at the annual general meeting on 25th October, 1910.

During the past year 7,947 calls have been made on the wagons of the Association, and the total number of patients conveyed since the formation of the Association is now 107,897.

In Glasgow alone the number of calls has been 5,077. This represents an average of 13.90 turns-out daily, or, leaving Sundays out of the calculation, 16.22. A brief analysis of these may be of interest. Out of the total 5,077 turns-out, 2,428 were to accidents and 2,649 to cases of illness. In 157 cases the wagons were not required on arrival. Of the 2,428 calls to accidents, 875 were from police offices, houses,

and stairs; 948 were street accidents; 322 from public works; 202 from docks and wharves; and 81 from railways and stations. 2,182 cases were taken to the Royal Infirmary, 923 to the Western Infirmary, 387 to the Victoria Infirmary, and 187 to the Maternity Hospital, the remainder being taken to their homes or other institutions. The wagons covered 23,730 miles during the year.

A remarkable increase falls to be recorded in the number of classes conducted and examined, last year's record of 545 being exceeded by no fewer than 82 classes, making a total of 627. A gratifying feature of the increase is that it is contributed to not only by the classes conducted from headquarters, but also by those promoted by nearly all the Association's Local Committees in Scotland.

The Council is pleased to observe a large increase in the number of classes in connection with the Glasgow and South-Western Railway, as the result of the strong encouragement such classes receive from those in authority. The importance of a sound knowledge of First Aid on the part of railway servants cannot be over-estimated.

For the purpose of encouraging the study of First Aid and of Home Nursing and Hygiene amongst the young, the Council has promoted courses of lectures for junior pupils under 16 years. The pupils, on passing the respective examination, receive one of the Association's Junior Certificates. Twenty-one such junior classes were conducted during the year, the pupils for the most part being drawn from the Boys' Brigades in Glasgow and other districts, and from the Boy Scouts. The latter organisation recognises the Association's Junior Certificate as equivalent to the Scouts' Ambulance Test, and as qualifying for its badges. While the result of the first year of this new departure is satisfactory, the Council anticipates a considerable increase as its scheme becomes more widely known, and it hopes that the stimulus thus given to the early study of First Aid and of Home Nursing and Hygiene may have the effect of adding to the strength of its senior classes in future years.

The arrangement made some years ago with the Scottish Education Department for utilising the machinery of the evening continuation class code for spreading the knowledge of ambulance work continues to be very successful, a large number of School Board classes having been conducted during the year.

THE OLDEST HOUSE IN GLASGOW.—Those who are interested

in the history of our city will welcome a small volume¹ which has just appeared from the pen of Dr. William Gemmell, and in which is set forth the story of the old building in Castle Street known as "Provand's Lordship."

Like many another object of antiquarian interest this old house has been the subject of differences of opinion. Thus in 1859 the late Sir Michael Connal expressed the opinion that it was built about A.D. 1435. In 1889, however, the late Mr. Dalrymple Duncan declared that the edifice was erected during the course of the seventeenth century, "and most probably is not older than 1650." From much painstaking research Dr. Gemmell is now certain that the "house is of *two* different periods—an older portion built in 1471, and a later portion built in 1670." His reasons for this view are given in the body of this book. He tells us that what is now the front wall, and faces Cathedral Square, was at first the back of the house; while the present back of the house, looking into a small court in Macleod Street, was, in the seventeenth century, its front, and took the place of a fifteenth century front now concealed within the building. The small court into which it looks is all that remains of a mediæval orchard.

After describing the house, he tells us how the name came to be given to it; and he gives some account of its builder, Andreas de Durisder, whose arms are still to be seen on the south-eastern gable. In 1455, this Andrew was presented to the See of Glasgow, and from this time he used the arms of Murehed. In 1471 he founded the Hospital of St. Nicholas, and opposite to the hospital he built a Manse for the Priest or Preceptor. Dr. Gemmell thinks that there can be no reasonable doubt that this manse remains to us at the present day as the building known as Provand's Lordship, and he explains how this name came to displace the former appellation—Manse of the Hospital of St. Nicholas. In succeeding chapters the history of the building is traced down to the present day.

There are in the text some notes of special medical interest, such as the early meaning of the word "hospital"; the early establishment in Glasgow of the system of sick-nursing by women; and concerning Darnley and the small-pox. In connection with this last there is in the "Notes"

¹ *The Oldest House in Glasgow, being the story of Provand's Lordship, the Manse of the Hospital of St. Nicholas*, by William Gemmell, M.B., F.S.A.Scot., Honorary Curator and Librarian (Glasgow: Hay, Nisbet & Co., 1910).

a long account of the desecration of his grave in Holyrood, and the story of the transference of some of his bones to the museum of the Royal College of Surgeons of England.

A notable feature of the work is provided by the "Notes," which extend to upwards of thirty pages of small type, and which are some evidence of the amount of study which the author has devoted to his subject.

The volume is furnished with a map and architectural plans, and also with numerous illustrations. The object of the publication is to excite a more widespread interest in this valuable relic of pre-Reformation times in Glasgow, and at the same time to help to wipe off the debt with which the members of the Provand's Lordship Literary Club are burdened as the result of their patriotic effort to preserve the old building for succeeding generations of Glasgow citizens and of Scotsmen generally.

Anyone who has visited Provand's Lordship will be aware of the difficulty of describing the building, and will fully appreciate the capable way in which Dr. Gemmell has performed this part of his self-appointed task. And not only is the description good, but the historical thread which runs continuously through the pages, and which is marked by judicial restraint and careful verification of facts and dates, gives a living interest to the subject.

The volume is excellently printed, and the illustrations which embellish it will appeal to all lovers of Old Glasgow.

PROFESSOR M'KENDRICK'S REMINISCENCES OF LOCHABER.—At the annual meeting of the Caledonian Medical Society, held at Fort William on 23rd September, 1910, Professor M'Kendrick gave as an address "Reminiscences of Lochaber in the Sixties." The address was published in the October number of the *Caledonian Medical Journal*, and makes most interesting reading.

While the whole address vividly recalls to us the presence of our old teacher, it is, we think, of special value as a piece of autobiography. Dr. M'Kendrick traces in it the various early steps and moves of his professional career. After graduating, in 1864, at Aberdeen, he had seven months' experience as visiting surgeon to the Chester Infirmary. Leaving Chester to take up an appointment in the Eastern Dispensary in Leman Street, Whitechapel, he "spent a year of hard work among the German Jews and other denizens of Whitechapel. Petticoat Lane, Little Ailie Street, the Minories, Shoreditch, and Ratcliff Highway contained the

homes of my patients, homes that sometimes could only be visited at night under the guardianship of a police officer." At this time he felt that his future professional career was all uncertain, that every position seemed to be occupied: and, in fitful moments of despondency, he almost regretted having entered the medical profession. His feeling of despondency, however, was mitigated by the interest which he took in biological science, and he embraced the opportunity he had of attending a course of lectures on the anatomy of the mammalia by Professor Huxley at the Royal College of Surgeons, and another by Dr. Spencer Cobbold, a famous helminthologist in his day. The appointment at the Eastern Dispensary held out no prospect of professional advancement, and the young graduate began to scan the advertisement columns of the medical papers. He narrowly escaped being medical officer for Sark: he actually accepted an appointment to a tea plantation in Assam, and then immediately resigned it, because he came to know that the last two incumbents had died of cholera. He afterwards was on the short leet for the Earlswood Asylum for Idiots, after which he was almost appointed prosector in the Zoological Gardens, Regent's Park. Ultimately he was appointed to the Belford Hospital, Fort William, where he took up duty in November, 1865. Here he spent several very happy years. The duties of the hospital were light, and he had plenty of time to study the flora and marine fauna of the district, and also to take meteorological records. After some reminiscences of the doctors of that day in Fort William, Dr. McKendrick goes on to give sketches of many of the local worthies. He then relates the circumstance of his meeting Professor Hughes Bennett, his corresponding with him, and his being ultimately offered the vacant assistantship in the Physiology Department of the University of Edinburgh. Thus began his connection with the branch of medicine which was to make his name so familiar to the scientific world, and himself to so many generations of medical students.

This little fragment of autobiography is of interest not only to his old students, but it points the moral to a wider circle of readers, namely, that in medicine, as in other things, there is truth in the maxim, "*Nil desperandum*."

THE PROBLEM OF MEDICAL EDUCATION.—A small volume dealing with medical education has just been published by Dr. Squire Sprigge.¹ It is a collection of the series of

¹ London: Baillière, Tindall & Cox. 1910.

articles by the author which originally appeared in *The Lancet*, and the object of which is to furnish anyone interested with information as to the problems of medical education and the various solutions suggested for them. We cannot here enter, however briefly, into the various matters contained in Dr. Sprigge's work, those interested should procure it and read it for themselves; but it seems to us that after perusing its various chapters we find one or two points clearly emerging.

First of all, the curriculum is overloaded. This statement is supported by the examination of statistics, from which it is found that "something over 80 per cent of the students occupy more than the statutory five years in their attempts to obtain a place on the Medical Register." Dr. Sprigge offers as a solution of this difficulty either that the overloaded curriculum must be better defined, or its duration must be prolonged. The average time taken by the student is considerably over six years. Apart from this, however, the University of London has extended the statutory time to five and a half years, and the new University of Bristol has followed suit: and the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England now allow a year's work in the preliminary sciences done at a recognised secondary school to count only as six months. This is a significant fact; and in view of other educational bodies possibly following this lead, it is necessary to bear in mind the financial status of the class of the community from which the majority of medical students are drawn. It is necessary also not to lose sight of the ill-supported condition of medical education, in consequence of which to lengthen the curriculum would be "to add to the burdens of those who now carry on this education almost gratuitously."

The "block" system receives considerable attention from Dr. Sprigge. This means that the concluding two years of the student's curriculum must be kept sacred to the final subjects (Medicine, Surgery, and Midwifery). Upon this decision of the General Medical Council follows the difficulty "that now the first three years of the student's time may not prove sufficient for his preliminary scientific studies, including his anatomy and physiology." The author thinks that here, at least as far as England is concerned, the public schools will probably come to the rescue by adapting the closing years of the schoolboy's education to his future profession. If more of his time at school were spent in

definite preparation for a medical career, the student's curriculum would be lengthened without any increase of expenditure on his education. It may be objected to this that by inducting the schoolboy into a purely professional educational course before he has completed his general education, we may deprive him of something that is valuable; but we agree with Dr. Sprigge that "such is the difficulty caused by the present overcrowded state of the medical curriculum, and such is the obvious waste of effort implied in the long delay which the students undergo in obtaining their qualification, that it is quite possible that reform will come in this direction."

The "one-portal" system also comes in for consideration, but Dr. Sprigge believes that at present it is not practical. There would be a clashing of interests of the various teaching and examining bodies, and it is not likely that the advocates of the system could present sufficiently strong arguments to overcome these and produce any effect either on the General Medical Council or on the legislature. Besides, as he shows in the earlier part of the book, the supervision by the General Medical Council of the curriculum and the examinations is a very good security for uniformity.

THE EDUCATION OF WOMEN: EDUCATION AND FERTILITY. —Under the auspices of the Eugenics Education Society, Professor A. Thomson, at Denison House, Vauxhall Bridge Road, London, on 18th of last month, delivered a lecture on "The Position of Women Biologically Considered." He said that one of the serious difficulties that confronted them was the alleged relatively great infertility of types and stocks of high intellectual and social efficiency. It was urged that this infertility was the nemesis of higher education and of individuation generally. It must be observed that they had no proof that high individuation directly lessened fertility. It was conceivable that the endeavour of self-realisation at a high level of culture might be so strenuous that it induced conditions tending against the making of good wives and mothers, but it could hardly be maintained that the deplored results were inevitably or intrinsically connected with that education. It was rather interesting to notice in passing that twenty-five years ago, when the pressure of population was much spoken of, the advice of the wise ones was "individuate," and thus reproductivity was lessened, while to-day, with a falling birth-rate, the advice was "do not individuate," for thus reproductivity would be lessened too

far. He thought that was a fitting place for a reference to the interesting suggestion that the intellectual among the women should keep themselves free for work in the world, which needed them so much, and leave it to their more placid and less ambitious and less intellectual sisters to be the wives and mothers. There was a biological objection—that they could not countenance a theory which deliberately left maternity to the less intellectual. The idea of leaving maternity to a docile and domesticated type while the intelligent ran the world was curiously non-biological.

CONCEALED BEDS AND CUBICLES.—The other week, at a meeting in connection with Quarrier's Sanatoria, Dean of Guild Henderson denounced in no measured terms those death-traps, which we euphemistically designate concealed beds. Over a hundred years ago Mrs. Hamilton, in her *Cottagers of Glenburnie*, through the medium of Mrs. Mason, raised her voice against these same abominations; and although Mrs. MacClarty met her cousin's zeal at every turn with "I canna be fash'd," and "It's weel enough," it is generally admitted that the rural Scotland of to-day is better hygienically for that reformer. All the same, there is not the slightest doubt that if that most excellent, though rather trying, female were to revisit the glimpses of the moon she would not find her occupation gone. Candidly, we had given up in despair the hope of ever being able to divorce the Scotsman from his concealed bed, to which he seemed to be wedded "for better, for worse." But perhaps Dean of Guild Henderson is made of sterner stuff; we earnestly hope so. Certain it is that, if he but set a stout heart to the "stey brae" in front of him, and, in season and out of season, condemn these awful anachronisms, he will be doing a great work. But if the Dean of Guild in his Court brings it about that no house containing a concealed bed will be passed, then he will have conferred an inestimable benefit on his kind, and will live for all time as a mighty consumption crusader.

Thoreau—ardent reformer or æsthetic humbug, whichever you please—declares, in his *Walden*, that in well regulated households the culinary arrangements are carried out with such secrecy that you might fancy the intention of the host was not to dine, but rather to poison his guest. The dressing and cooking of meats never had for us any great attractions, so we are perfectly content to leave things as they are. But if Thoreau had said that we hide our beds as though they

were lethal couches set to entrap the unwary, we would have been with him all the time.

The home of the working man, in many instances, consists of one or, at most, two apartments, so perhaps there is little wonder that he should try to make a kitchen appear only a place to cook in, and a dining-room merely a chamber to dine in, when, in reality, both play many parts, of which a bedroom is not the least.

Honesty is the best policy, even in the matter of beds, but to advocate a council of perfection is not always expedient, so we hesitate to urge what we believe—that the only healthy sleeping appliance is a plain iron bed, set in the middle of the room, and unadorned with flounces, frills, and furbelows.

But is the furniture of sleep so repulsive or indecent that it must be kept huddled out of sight at all costs? If so, why cannot our working classes patronise these folding iron beds, that can be shoved into a corner during the day and occupy the very centre of the floor at night? If, even in a draped condition, this bed still offends, why should the medical profession not bless by its sanction, since it dare not by testimonial, all those wonderful contrivances which to the uninitiated look like *art nouveau* sofas, chiffoniers, and what-nots, but which, at the touch of a magic hand, become most serviceable bedsteads? But folding beds and magic couches can only be obtained at a price which is prohibitive to many. Is there no other alternative? We believe there is. We are thoroughly in accord with Thoreau—maker of paradoxes—when he declares that, if a man would escape from the thralldom of civilisation, he must drop his bed and run. In all seriousness, is there any cogent reason why we should not return to that condition of simplicity in which it might be truthfully said of a man, he took up his bed and walked?

We earnestly desire to draw the attention of the Dean of Guild to another, and allied, subject, which we consider well worthy of his steel. We refer to the cubicle system in lodging-houses.

It used to be that in all the common lodging-houses of Glasgow the patrons of these establishments slept in beds arranged in dormitories, larger or smaller, the best being not unlike a ward in the old Royal Infirmary, with, perhaps, the beds a trifle closer. Within recent years these open dormitories have been almost entirely replaced by cubicles. The cubicles, of course, are very small: you have barely room to turn in them: and, in order to still further economise space, each is dovetailed into the one next it. It thus comes about that in

one cubicle the inmate sleeps on a narrow platform raised some 4 or 5 feet from the floor, while in the adjoining chamber the sleeper stretches himself on a pallet (perhaps a foot off the ground) cunningly placed in a recess about 3 feet high, immediately under the bed of his neighbour. To any unprejudiced observer these rooms containing cubicles seem horribly overcrowded; yet we know, since all these premises are licensed, that the law has seen to it that every man has his regulation cubic feet of air. What then? Are we not all agreed with Mr. Bumble that "the law is a ass—a idiot?"

At night we may take it for granted that the windows of all lodging-houses are closed, for the poor man is no fonder of fresh air than the rich one, who, from the security of a platform, urges his brother to use in unstinted quantity this noble element. It might, perhaps, be ungenerous to insist on a certain well-known ophthalmological proverb: but, for reasons that are sufficiently obvious, the rich *may* do with impunity what the poor *can't*. "The destruction of the poor is their poverty" (Prov. x, 15)—a text from which countless homilies on most aspects of the tuberculosis problem might be preached.

In the day-time, when the sleepers are at work, the windows are thrown wide. The open dormitory is swept by the four winds of heaven, the sun (when he deigns to shine) can play in every nook of it, and the "scrubbers" have no perplexing corners and distracting angles to worry them. But no matter how much you open your windows, a cubicle is never visited by heaven's blessed breeze, the sun never penetrates to its dark recesses, and, though the smell of carbolic soap might tempt the unwary to conclude that the problem of how to cleanse a cubicle had been solved, we very much doubt it. Wherever the odour of carbolic lingers, all is not well!

The advocates for the cubicle system claim that it ensures privacy, and prevents thieving. In a cubicle a man need not sleep with one eye open, for, if the truth must be told, the "light-fingered gentry," who are to be found in most common lodging-houses, would steal the very teeth from out your head if they got the chance. But what an exorbitant price does the poor man pay for security of tenure of his miserable goods and chattels, when for such "trash," such "nothing," he barter health. How about the weary consumptive wight, who retires to his *cubiculum* sore troubled with a racking cough, and a spit that compels expectoration; and what of the unfortunate person who comes after him! To call these resting places "hotbeds of infection" is no mere figure of

speech, but horrible literal truth, almost indecent in its nakedness!

Our sympathy goes out especially to the wretch who inhabits the nethermost bunk. How, in the name of all that is just, can we, in this great twentieth century, allow these humble toilers to revert to the condition of Troglodytes? "I could be bounded in a nutshell, and count myself a king of infinite space" is a beautiful conception, so long as we confine it to realms of the imagination; but it becomes a terrible doctrine when applied practically by lodging-house keepers to their helpless clients. How under these circumstances can sleep be "sore labour's bath, balm of hurt minds, chief nourisher in life's feast"? Why, this place "does murder sleep!" Then "in this sleep of death what dreams may come!"

We have not the slightest doubt that in these loathsome dens dreams have been dreamt that rivalled, mayhap excelled, in horror anything that Hamlet dreaded, or that Clarence actually experienced. But, now and then, there must have been less awesome dreams: and we can imagine some poor devil of a strolling actor, after crawling into his lair, to have dreamt and muttered quite appropriately thus:—

"The air, look you, . . . appears no other thing to me than a foul and pestilent congregation of vapours."

.

"Shall I not then be stifled in this vault,
To whose foul mouth no healthsome air breathes in
And here die strangled?"

.

"Is there no remedy?"

.

"Ay, on mine honour! . . .
. . . give him air: he'll straight be well."

THE TREATMENT OF INOPERABLE QUINSY.—Though it has never been our lot to meet with a case where a patient died, or seemed like to die, from an un-get-at-able abscess in the tonsillar regions, we know, from the experience of others, that "May a quinsy choke thee!" is no empty curse. When "the mouth cannot be opened, when even the teeth cannot be separated so far (actively or passively) as to interpose the edge of a knife between, not to say beyond,"

the question is, What's to be done? The answer would appear to be—make your patient laugh.

In our esteemed contemporary, *The Medical Press and Circular*, for 21st December, 1910, there is a most interesting article, entitled "Tonsillar Abscess: A Historical Note," in which the author, John Knott, M.D. Dubl., describes the jocular treatment of this serious condition, with a facetiousness and a *verve* that we wish would prove infectious. Three most excellent stories, hailing from England, Germany, and China, are here detailed. But, though brevity is the soul of wit, a joke is just one of those things which can not be successfully administered in tabloid form; so, as our space is limited, we must refer the curious in these matters to Dr. Knott's original paper.

Anyone, who has ever read Dr John Brown's *Horæ Subsecivæ*, can no sooner have heard laughter and quinsy conjoined, than he must at once have thought of that inimitable story which is there told. This jest is so thoroughly Scottish; it is funny enough to tickle you to death, yet can be enjoyed to the full without the least indulgence in ribald laughter. It has that peculiar quality, which is so much esteemed by connoisseurs in Scottish humour, and which we prize so highly in champagne—it is, literally and figuratively *extra sec.* Believing it impossible to modify with anything like a happy result Dr. John Brown's diction, we quote his exact words:—

"I may give an instance, when a joke was more and better than itself. A comely young wife, the 'cynosure' of her circle, was in bed, apparently dying from swelling and inflammation of the throat, an inaccessible abscess stopping the way; she could swallow nothing; everything had been tried. Her friends were standing round the bed in misery and helplessness. 'Try her wi' a compliment,' said her husband, in a not uncomic despair. She had genuine humour as well as he; and as physiologists know, there is a sort of mental tickling which is beyond and above control, being under the reflex system, and instinctive as well as sighing. She laughed with her whole body and soul, burst the abscess, and was safe."

Needless to say, the brusque Abernethy was not the man to crack a joke to burst an abscess. His methods were of a grimmer nature, but he got there all the same. It is told of him that he once was summoned as a *dernier ressort* to see a high society dame, who was much in the condition of the lady depicted in Dr. John Brown's story,

before she was restored by "the saving grace." The great Scotsman came: and took in the situation at a glance. He turned the friends and attendants out of the sickroom, locked the door, thrust the poker into the fire, and, taking up his position on the hearthrug, silently regarded his patient with a "I'll-kill-ye-wi'-a-glower" sort of look. When he thought the poker was sufficiently heated, he withdrew it from the fire: and, brandishing it above his head, suddenly made a rush at his victim, shouting out, at the same time, "Swallow that ye——!" The lady, wellnigh distracted by this maniac-like behaviour of her surgeon, gave, with all her strength, one despairing and stupendous cry for help, and—obtained instant relief.

As a result of mature deliberation, we have come to the conclusion that, in these days of vexatious litigation, it might, perhaps, on the whole, be safer for the reader when next he encounters this desperate condition in a female patient to "try her wi' a compliment," before he tries her with the poker. After all, you need to be an Abernethy to carry off this sort of thing. With ordinary doctors there is always the risk—remote, we grant, but still there—that the lady may not find her tongue.

THE ARCHEOLOGICAL SURVEY OF NUBIA.—By the kindness of the Director-General, Survey Department, Egypt, we have been furnished with the Report for 1907-1908 of the Archaeological Survey of Nubia. The Report is in two volumes, each of which is illustrated by separate volumes of plates and plans. Vol. I contains the Archaeological Report, by Dr. Reisner; Vol. II deals with the Human Remains, and contains reports by Drs. Elliot Smith and Wood Jones.

The story of the reason for making the survey is briefly told by Captain Lyons in his preface to the Report.

The requirements of extending cultivation, and especially of the cotton crop in Lower and Middle Egypt, called for an increased water-supply, to meet which the Aswan Dam was constructed, and was completed in 1902. By its means a large volume of water from the Nile could be stored in November and December, and returned to the river in May, June, and July, when the normal discharge of the river is inadequate. This storage of water entailed the submersion of a considerable length of the Nile Valley in Nubia for the first six months of the year. In 1907 the Egyptian Government decided to increase the volume of water thus stored

in order to reclaim a large tract of land on the northern margin of the Delta, and to this end decided to increase the height of the dam at Aswan by 7 metres. This involved the submersion of the valley and the cultivated land on either bank about as far up as Derr, and in the lower reach, the desert margins and the tributary valleys. It seemed likely that dwellers in the region which would be thus inundated had had opportunity to develop without interference by invasion or immigration on any large scale, and it was therefore determined to carry out a systematic archaeological survey of so much of the valley as was to be submerged by the reservoir when increased to the new level (113 metres above the Mediterranean Sea).

The aim of the survey was to preserve an account, as accurate and complete as possible, of the existing vestiges of early life and culture, which must inevitably perish when submerged.

A complete survey of the valley and of the desert on either side for a short distance from the river was provided for; accurate plans of each locality where an ancient site or cemetery was found were to be prepared, also special large scale plans of each cemetery to show the location and orientation of each grave.

The belt of country was examined by trained diggers, who noted all places where there appeared to be ancient settlements or cemeteries. These were then excavated under the supervision of Dr. G. A. Reisner. Each site was carefully exposed, each interment photographed, every object was registered, and full records kept. Dr. Reisner's acquaintance with early Egyptian art and civilisation enabled him to date each interment, and so provide a basis for anthropological studies. This portion of the work was carried out on the ground by trained anatomists—Professor Elliot Smith and Drs. Wood Jones and Derry—and the results of their examinations supplied the archaeologists with information regarding sex, age, and racial peculiarities, and in addition were the means of making large additions to the *history of disease, and of medicine and surgery*.

Dr. Reisner's report deals with the methods used in the survey, and the progress of the expedition. He then describes the site excavated, the types of graves and of burials. In the concluding chapter he describes the Nubian archaeological groups and their chronological order, and gives a historical review of Lower Nubia, from which we learn that during the Pre-dynastic period Nubia and Egypt

were culturally and racially one district. From the First Dynasty on, there is visible in Egypt an increased development, in which Nubia did not share. The latter held on to the old arts and customs, lost perhaps the best elements in its population to Egypt, and absorbed a certain amount of negroid population from the south or from wandering tribes out of the eastern or western desert. Living in extreme poverty and isolation during the Old Empire (Fourth to Sixth Dynasties), in the Middle or Late Middle Empire (Seventh to Sixteenth Dynasties), Nubia shows a revival of prosperity, and we reach the culminating period of the Nubian race. Examination of the Earliest New Empire graves (Seventeenth to Twentieth Dynasties) shows a change, "Nubia suddenly becomes Egyptianized." The land was invaded by Egyptian immigrants, and in the Eighteenth Dynasty the products of the more highly developed Egyptian arts replace those of the old Nubian order. There was a racial change due to the infusion of Egyptian blood. This new population, further modified by negroid and alien elements, was the progenitor of the modern Nubian population. From the Ptolemaic period onward, the changes have a religious basis—paganism replaced by Christianity, which in its turn yielded to Islam. Each of these religions brought its own burial customs; otherwise there was practically no change in the race and its source of livelihood down to the building of the Aswan Dam.

So much for the purely archæological parts of the survey of Lower Nubia. We hope in a future issue to notice the Report on the Human Remains.

NEW PREPARATIONS, &c.

From Messrs. The Fellows Company of New York.

Some Posological Hints and other Useful Information.—This is a small brochure which we understand the company of Fellows' Syrup fame is issuing to all the practitioners in this country. The information contained in it is stated to be compiled from sixteen different publications. It should be noted however, that the drugs referred to are those of the *U.S.P.*, and special note should be made that the *U.S.P.* tr. *aconiti* is much weaker and its tr. *opii* is much stronger than the corresponding *B.P.* preparations. The page on diuretic agents seems rather dogmatic. However, the compilation is well worth looking through.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1910-1911.

MEETING II.—21ST OCTOBER, 1910.

The President, PROFESSOR ROBERT MUIR, in the Chair.

I.—TWO CASES OF ENTEROCOLOSTOMY FOR IRREDUCIBLE INTUSSUSCEPTION.

BY MR. HENRY RUTHERFURD.

Mr. Rutherford showed two children in whom enterocolostomy had been done for irreducible intussusception. Both were aged 4 months at date of operation, two and a half years and five months ago. A report of the former case appeared in the *British Journal of Children's Diseases* for September, 1910.

II.—TRANSPLANTATION OF BONE IN CASE OF RESECTION OF LOWER JAW.

BY MR. HENRY RUTHERFURD.

A woman in whom transplantation of a bone (eleventh rib) had been done after resection of the lower jaw for myeloid sarcoma. The piece of rib, about 2 inches long, was implanted after the resection wound had healed; meantime the cut ends of the jaw were kept apart by an ivory pin. Facial symmetry was preserved both with shut and open mouth, but bony union had not taken place between the graft and the distal cut surface of the jaw.

III.—CASE OF ALEUKÆMIC LEUKÆMIA.

BY DR. W. K. HUNTER.

The patient is a boy, 12 years of age, and his illness would seem to date from January, 1910. About this time

his schoolmaster noticed that the glands in the neck were enlarged, but the parents had not observed the enlargement, although when pointed out to them it was quite apparent. The glands all over the body were enlarged, but especially those in the neck. During the spring months the glands seemed to lessen in size, but since the end of June they had become larger again. The general health all along had been excellent, and the boy could run about and play with his school companions without undue fatigue.

I saw him for the first time at the beginning of September, and then he looked strong and robust, without any appearance of anæmia. There was enlargement of the glands under the lower jaw, as well as of those along the line of the sterno-mastoid muscle and along the anterior margin of the trapezius: no individual gland was larger than a hazelnut. Glands of the same size were found in the axillæ and in the groins. The spleen was enlarged, extending below the costal margin as far as the level of the umbilicus. There was no apparent enlargement of the liver, and no evidence of enlargement of the mediastinal or abdominal glands.

The examination of the blood was as follows:—

Red corpuscles,	3,950,000 per c.mm.
White corpuscles,	7,916 „
Hæmoglobin,	85 per cent.

Blood films showed slight variation in the size but little change in the shape of the red corpuscles. There was slight polychromatophilia, but no nucleated red cells were to be found. The differential count of the white cells was as follows:—

Polynuclear cells,	3 per cent.
Lymphocytes,	95 „
Eosinophile cells,	1.5 „
Mast cells,	0.5 „

The prevailing lymphocyte was at least one and a half times as large as a red corpuscle, and some cells were very much larger. Some of these larger cells showed very little cytoplasm, and most of those with a larger amount of protoplasm contained azurophile granules.

The boy was treated with liquor arsenicalis, 5 to 9 drops three times a day, and this was continued for a fortnight. A fortnight later it was again started and given for ten days, when it was stopped on account of diarrhœa. I saw the patient for the second time on 14th October, and then

the glandular enlargements in the neck had almost entirely disappeared. There was still one small gland to be felt in the right axilla, and the glands in the groin were still palpable. The splenic enlargement was as formerly noted. The boy, however, was not looking so well. He was much paler, and the mucous membranes looked anæmic. For the previous ten days he had been less inclined for exertion, and he had been sweating a great deal. The blood count was now as follows:—

Red corpuscles,	3,160,000 per c.mm.
White corpuscles,	2,812 „
Hæmoglobin,	55 per cent.

There were no nucleated red cells to be seen in the films. Of the white cells there were:—

Polynuclears,	10 per cent.
Lymphocytes,	87 „
Eosinophiles,	2 „
Mast cells,	1 „

The majority of the lymphocytes were larger than the red corpuscles, and a fair proportion were large lymphocytes, some with protoplasm. There were no myelocytes to be found on staining with the triacid stain.

On comparing the two blood counts, that of 1st September with that of 14th October, it will be seen that the number of polynuclear cells has remained very constant (277 per c.mm. on 1st September, and 281 per c.mm. on 14th October), and that the diminution in the white corpuscles on the latter date is at the expense of the lymphocytes, which numbered 2,446 per c.mm. on 14th October compared with 7,600 per c.mm. on 1st September.

Remarks.—It is now recognised that the old definition of leukæmia as a condition in which there is a great increase in the number of white corpuscles in the blood is not sufficiently comprehensive, and that there are cases which show little or no increase of white corpuscles and sometimes even a leucopenia. Such cases are most often of the lymphatic variety, and their diagnosis depends on the very large percentage of lymphocytes (over 90 per cent) found on making a blood count. The case I have just described to you seems to be of this type, and I think there can be little doubt as to the accuracy of the diagnosis; but how long the blood will remain aleukæmic it is quite impossible to estimate.

IV.—CASE OF APLASTIC ANÆMIA.

BY DR. W. K. HUNTER.

This patient was a girl, aged 8 years. I saw her at the end of June, and she had then been ailing for nearly a year. The illness seems to have come on most insidiously, and it was not till some purpuric spots appeared on the skin that the parents thought of there being anything serious the matter. The spots were few in number, but they kept coming out in little crops, more or less constantly, for nearly a year. The child had gradually been getting more and more anæmic, and more recently there had been considerable hæmorrhage from the nose, gums, and bowel.

On examination I found the patient exceedingly pale and anæmic-looking, but there was no enlargement of the liver, spleen, or lymphatic glands. The blood count was as follows:—

Red corpuscles,	1,050,000 per c.mm.
White corpuscles,	5,000 „
Hæmoglobin,	30 per cent.

The red corpuscles showed some variation in size, but there were few undoubted megalocytes and little poikilocytosis. There were no nucleated red corpuscles to be found and no polychromatophilia.

The following were the proportions of the white corpuscles:—

Polynuclear cells,	18 per cent.
Lymphocytes (mostly small),	76 „
Transitional cells,	2 „
Eosinophile cells,	4 „

Treatment was of no avail, bleeding continuing from the mucous surfaces, and the child died a fortnight later.

Remarks.—It is very unfortunate that no *post-mortem* examination could be obtained, but in its clinical aspects the case closely resembles one reported by Professor Muir under the title “A case of purpura and intense anæmia with marked deficiency in the red bone marrow.”¹ Professor Muir regarded the anæmia in his case as due to a primary change in the bone-marrow. During the past few years a good deal of attention has been paid to this form of anæmia, and Cabot² has collected twenty-four cases under the term “Aplastic anæmia.” At a meeting of this Society held last winter

¹ *British Medical Journal*, 29th September, 1900.

² Osler and McCrae's *System of Medicine*, 1908, vol. iv, p. 638.

Drs. Carslaw and Shaw Dunn¹ reported yet another case, and in their paper they referred to several other recent cases. The symptomatology of the condition is now fairly well defined, and the disease may be characterised as a severe and progressive anæmia which progresses rather rapidly and without remissions; as occurring chiefly in young people and more often in females than in males. There is nearly always some bleeding from the mucous membranes and into the skin. There is a great diminution in the red corpuscles, and the hæmoglobin index is sometimes below and sometimes above normal. There is little anisocytosis or poikilocytosis, and no nucleated red corpuscles in the majority of the cases. Leucopenia is the rule, with a relative increase of lymphocytes (70 to 90 per cent).

The case I have just described to you closely corresponds to this symptom-complex, and so I have designated it a case of splastic anæmia.

V.—TWO CASES OF ANEURYSM OF THE SPLENIC ARTERY.

BY DR. R. S. TAYLOR AND JOHN H. TEACHER.

Drs. Taylor and Teacher's communication will appear as an original article in a future issue of the *Journal*.

VI.—ENUCLEATION OF THE TONSIL FOR CHRONIC DISEASE.

BY DR. W. S. SYME.

Dr. Syme's paper will appear as an original article in a future issue of the *Journal*.

¹ *Glasgow Medical Journal*, May, 1910.

OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

SESSION 1910-1911.

MEETING III.—14TH DECEMBER, 1910.

The President, DR. A. W. RUSSELL, in the Chair.

This meeting was held in the Royal Samaritan Hospital for Women. The President conducted the Fellows and their friends through the wards of the hospital and operating theatres.

I.—DR. NIGEL STARK showed the following specimens:—

1. Three uterine fibroids illustrating some of the varieties of clinical symptoms.
2. Hæmatosalpinx and hydrosalpinx with cystic disease of both ovaries, apparently of long standing.
3. A pelvic dermoid.
4. Uterus in state of fibrosis.
5. Malignant disease of ovaries, liver, omentum, and intestines.

II.—DR. A. W. RUSSELL showed—

1. Appendix and small ovarian tumour from same case.
2. Small ovary with adhesions removed on account of persistent pain.
3. Small ovarian cyst removed during ventrofixation.
4. Small ovarian cyst.
5. Curettings from case of glandular endometritis.

III.—DR. W. D. MACFARLANE showed—

1. Fibrosis of uterus.
2. Solid ovarian tumour.
3. Fibroid of uterus.
4. Fibroid of uterus with cystic ovaries.
5. Ovarian cyst with torsion of pedicle.
6. Fibrocystic ovary.
7. Extra-uterine pregnancy complicating uterine pregnancy.
8. Adenocarcinoma of both ovaries.

GLASGOW NORTHERN MEDICAL SOCIETY.

At a meeting held on 6th December, 1910, DR. ANGUS MACPHEE initiated a discussion on "The Reform of the General Medical Council." Dr. Macphee said he had originally intended to discuss the one-portal system, but priority was given to the former subject, not because it was more important, but because it was utterly impossible to get any change in the system of registration until the General Medical Council was reformed. The General Medical Council had done some excellent work, but more remained to be done.

At present there were twenty-six licensing bodies, each independent of the other, with no uniform standard of examination and all pecuniarily interested in granting licenses. In introducing the subject, two thoughts occurred to him—(1) Is there any need for reform? (2) If there is need, how is the reformation to be carried out? As regards the first question, there were two particular reasons, (1) the unsatisfactory composition of the General Medical Council, and (2) its very limited powers.

In 1858, when the General Medical Council was first formed, there were 17 members appointed by the licensing bodies, and to these the Privy Council added 6, making 23 in all. This continued until 1886, when 5 direct representatives were added. Then there were 20 from the licensing bodies (England having 8, Scotland 7, and Ireland 5), 5 direct representatives, and 5 appointed by the Privy Council, making 30 members altogether.

Every now and again a provincial school and licensing body started in England, until in 1910 there were twenty-four licensing bodies. As new schools were formed, new members would be appointed. Next year two new colleges would come into being, making twenty-six licensing bodies altogether, each with a representative in the Council, while the direct representatives would only number 6.

In 1886, when 5 direct representatives were appointed, there were 26,000 medical men in this country. In 1910, there were upwards of 40,000, and yet not a single additional direct representative in all these years, although next year there would be one more.

As regards the limited powers of the General Medical Council, nine-tenths of the work was trying penal cases.

A qualified man was put in a most unfair position compared to the unregistered man: he was at once pounced upon for doing anything irregular, just because he was registered. Then there were men known by the Council itself to be incompetent, and yet the Council was compelled to put them on the Register.

How should the reform be carried out? It could and it should be done, not by the General Medical Council, but by the outside general practitioners. There were means provided in the Medical Acts to get these reforms carried out.

Representation could be made to the Privy Council. The general practitioner should agitate and get the co-operation of a number of the medical societies. Then the agitation could be continued by means of meetings, memorials, and getting in touch with the Members of Parliament.

Dr. Macphée also alluded to the Unqualified Practice Prevention Committee, and pointed out that in many countries unqualified practice was forbidden. He also read a letter from Dr. Norman Walker, our direct representative on the General Medical Council, saying that the Council has no power whatever over unqualified men, and offering to give an address on the subject in Glasgow in the spring.

Dr. Caskie congratulated Dr. Macphée on introducing such a very interesting subject for discussion, and was of opinion that, from the statistics given, there was some cause for agitation.

The *President* (Dr. A. J. Ballantyne) thought that the subject was one that deserved to be thought of seriously. We should not dismiss it, but get up interest and set some ideas afloat before spring when Dr. Norman Walker intended to come. There was no getting past the fact that this anomalous condition was unfair, not only to the profession but to the public, and if sufficient expression of opinion was made among the general public, reform would be forced. The General Medical Council could not protect the interest of the public so long as it had not the power.

Dr. Macphée moved that a small committee be appointed with powers to get into touch with the other medical societies in the district, so as to draw up a report or memorial, or formulate questions to put to Dr. Walker.

Dr. A. T. Campbell seconded.

It was unanimously agreed that the proposer and seconder of the motion, with the President and Secretary, should constitute the committee, Dr. Macphée being convener.

REVIEWS.

A System of Medicine by Many Writers. Edited by SIR CLIFFORD ALLBUTT, K.C.B., M.A., M.D., LL.D., D.Sc., F.R.C.P., F.R.S., F.L.S., F.S.A., and HUMPHRY DAVY ROLLESTON, M.A., M.D., F.R.C.P. Vol. VII: Diseases of the Muscles, the Trophoneuroses, Diseases of the Nerves, Vertebral Column, and Spinal Cord. London: Macmillan & Co., Limited. 1910.

THIS volume comprises parts of Volumes VI and VII of the original edition which appeared eleven years ago, and there are numerous important additions and alterations in the text bringing it into line with the latest accepted views on the various conditions.

The section on diseases of the muscles contains new articles on amyotonia congenita, myasthenia gravis, family periodic paralysis, and the neuritic type of progressive muscular atrophy.

The article on trophoneuroses has been expanded by Dr. H. G. Turney, while Sir T. Barlow, Bart., supplies the articles on Raynaud's disease and erythromelalgia.

Probably the most notable new feature in this edition is the introduction to neuropathology by Dr. F. W. Mott. It occupies about 116 pages, is written in a masterly style, and contains many admirable illustrations, some of which are coloured. Sir William Gowers contributes the article on medical ophthalmology, and it, like those on diseases of the cauda equina and the sympathetic system, is quite new.

In diseases of the spinal cord there are many additional articles, *e.g.*, those dealing with subacute combined degeneration, familial and hereditary ataxia, syphilis, and tumours of the spinal cord. Dr. M. Allen Starr writes the articles on acute poliomyelitis and syringomyelia, while that on tabes dorsalis is from the pen of Dr. J. A. Ormerod, and that on disseminated sclerosis by Dr. J. S. Risien Russell. The article on myelitis has been rewritten by Dr. F. Taylor and Dr. Farquhar Buzzard, while the latter has given an account of Landry's paralysis. Dr. Leonard Hill writes a new article on caisson disease. The papers by the late Dr. C. E. Beever on chronic anterior poliomyelitis and amyotrophic lateral

sclerosis have been rearranged and revised by Dr. Batten and Dr. Gordon Holmes under the title of motor neuron disease, and that by the same author on bulbar paralysis has been revised by Dr. F. E. Batten.

The great advance which has taken place in neuropathology during the last decade has called for much rearrangement of ideas regarding many diseases, and the reader will find these changes reflected in the pages of this volume. One need not say more in its favour than that it is quite worthy to take its place along with the other excellent volumes of this standard *System of Medicine*.

Fractures and Separated Epiphyses. By ALBERT J. WALTON, F.R.C.S.Eng. London: Edward Arnold. 1910.

THE object of the author is to supply students and those first commencing hospital appointments with a small book dealing with the more practical aspect of fractures. To this end attention has been directed to the details of the application of the different forms of splints, while the main outlines of operative treatment have been sketched. Fractures of the skull and spine have been omitted, as in the author's opinion these lesions are of importance mainly from the associated injury of the soft parts, a subject beyond the scope of the present volume.

The matter is arranged in the usual systematic fashion. The etiology, varieties, symptoms, and pathology of fractures are considered in the opening chapter. The account of the repair of a fracture is not very clear. The provisional callus and its formation is described. Then on page 17 we are told that "it is gradually absorbed and replaced by new bone uniting the fractured ends"; but the author gives no indication as to the origin of this new bone. The chapter as a whole is, however, very satisfactory. In the general methods of treatment immobilisation by the various forms of splints, treatment by massage and passive movement, and operative measures are all described, and the author indicates the circumstances in which he would advise one or other of these methods. This section is very fairly done, and will prove of great use to those who are following the practice of the clinique.

In the description of complications, the production of compound fracture is stated as due to direct or indirect violence. It would, we think, have been more accurate to say that a

fracture, whether produced by direct or indirect violence, may become compound. In all cases the actual violence which causes the wound in the soft tissues is applied directly, whether from within or without. This chapter is very well done.

Individual fractures are considered in the succeeding chapters. They are very clearly described, many of them are figured in *x*-ray plates, and the lines of treatment are laid down. Prognosis also is fully gone into; and this is an important subject, and one which should bulk largely in the study of fractures. A fairly extensive bibliography will be found in the footnotes on the various pages.

The book is a readable one, and will prove of great use to those for whom it has been written. It will also, we believe, be a help to many practitioners, and we have pleasure in recommending it to our readers.

Pye's Elementary Bandaging and Surgical Dressing. Revised and partly Rewritten by W. H. CLAYTON GREENE, B.A., M.B., B.C., F.R.C.S., assisted by V. ZACHRAY COPE, M.D., M.S.Lond., F.R.C.S.Eng. Bristol: John Wright & Sons, Limited. 1910.

THIS little book deals in a brief and elementary manner with bandaging, splints, the simpler ways of dressing wounds and burns, and first-aid treatment of accidents and emergencies.

It is designed for the use of dressers and nurses, and as such should be serviceable.

Sprains and Allied Injuries of Joints. By R. H. ANGLIN WHITELOCKE, M.D.Edin., F.R.C.S.Eng. Second Edition. London: Henry Frowde and Hodder & Stoughton. 1910.

IT is so short a time since the appearance of the first edition of Mr. Whitelocke's work on *Sprains and Allied Injuries* that we cannot expect much to have been added to the present edition. There is, however, a very good account of Schlatter's disease, and interesting suggestions as to treatment are put forward by the author. Exostoses about the knee, and their relations to knee-sprain, are shortly noticed, and there is also a short account of partial dislocation outwards of the patella.

The appendix to the first edition has been amplified, and now forms a chapter of the work. The author is very guarded in his remarks on fibrolysin; but he is distinctly hopeful as to the future of kataphoresis.

We can recommend the work to our readers as an interesting exposition of a branch of practice which comes within the purview of a large number.

Gall-Stones and Diseases of the Bile-Ducts. By J. BLAND-SUTTON, F.R.C.S.Eng. With 53 Illustrations. New and Revised Edition. London: J. Nisbet & Co. 1910.

IN this new and revised edition the author has made several additions. Thus a new chapter is devoted to typhoid infection of the gall-bladder, and this subject is very much amplified from what appeared regarding it in the former edition. There are also additional paragraphs in the chapter on epithelial tumours. In these paragraphs the author refers to the view that many of the more serious diseases of the ducts are caused by a primary infection from the blood, and he thinks it is conceivable that cancer of the gall-bladder is caused by some infecting agent obtained from the alimentary canal by the blood, eliminated by the liver, and lodged in the gall-bladder. This poison, according to Mr. Bland-Sutton, stimulates the epithelium to unnatural growth. As regards the relation of cancer to gall-stones, he believes that the pathological conditions of the epithelium which cause it to produce cholesterol in abundance increase its vulnerability to the micro-parasite of cancer.

We are glad to be able to reiterate the opinion expressed in our notice of the former edition, that the book should prove of use to practitioners and students.

Handbook of Intestinal Surgery. By LEONARD A. BIDWELL, F.R.C.S. Second Edition. London: Baillière, Tindall & Cox. 1910.

MUCH has taken place in the practice of intestinal surgery within the last few years: and this the author claims to have embodied in a second edition of his work. Three-quarters of the book, or the first six chapters, are devoted strictly to

intestinal surgery, while the remainder, or the last three chapters, deals with "Incisions into the abdomen and the method of closing them," "The preparations before abdominal operation," and "Treatment after abdominal operation." There is nothing to add to what was said in noticing the first edition regarding the strictly intestinal portion. The operations are all clearly described, and the descriptions enhanced by the liberal distribution of diagrammatic drawings. Some of the nomenclature, as previously pointed out, is still defective and out of date: wanting in that accuracy of definition now so necessary for differentiation between the many methods at present in vogue. The last three chapters, devoted to the subjects above mentioned, are in every way practical, and both simple and, on the whole, sound in teaching, but it may be questioned whether the author is altogether judicious in such advice as the following:—"If the patient suffer from severe shock during the operation, the amount of the anæsthetic had better be diminished and the patient kept scarcely under its influence."

Anatomy, Descriptive and Applied. By HENRY GRAY, F.R.S. Seventeenth Edition. Edited by ROBERT HOWDEN, M.A., M.B., C.M. London: Longmans, Green & Co. 1909.

FIFTY-ONE years ago the first edition of Gray's *Anatomy* was published, an epoch-making book at that time, being the best and most extensively illustrated text-book of anatomy in existence. The first edition occupied 750 pages, and was provided with 363 illustrations: the present edition extends to 1296 pages, and has 1,032 illustrations, an indication of the great expansion that has taken place in our knowledge of anatomy. The original illustrations, which can be seen on referring to the first edition, are mostly retained in the present volume, and for clearness in outline and fidelity to anatomical detail they have not been equalled, and are hardly to be improved upon.

We have no doubt that the success of Gray's *Anatomy* is largely to be ascribed to the skill of one man—Dr. Vandyke Carter, the anatomical draughtsman, whose training under an able artist was provided by the Council of the Royal College of Surgeons of England, and who drew nearly all the illustrations for the first edition.

One of the outstanding features of the present volume is the very complete and up-to-date account of the lymphatic

system incorporating the most recent researches. We specially note the numerous instructive diagrams of visceral lymph glands and lymph areas, a subject of vital importance to surgeons at the present day in reference to the spreading of cancer.

The chapters on embryology embody the latest information on the subject: numerous new and helpful diagrams have been added to this part of the work.

The sections on the brain and spinal cord have been thoroughly revised and brought up to date, and many new diagrams have been incorporated. One of the old diagrams (Fig. 792) of the cutaneous nerves of the back—after Hirschfeld and Leveillé—is misleading and would be better dispensed with, as it shows cutaneous branches from the lower three posterior divisions of cervical nerves, these nerves being small and not reaching the skin.

We are pleased to note that the title of the work is now, "Anatomy, Descriptive and Applied," instead of, "Anatomy, Descriptive and Surgical." The sections on applied anatomy having reference to surgery have been revised and amplified by a surgeon; those referring to medicine have been similarly dealt with by a physician. Both have executed their task in a way to be highly commended.

The present edition of Gray's *Anatomy* is a great improvement on the last two or three editions, as regards the recognition of the later results of anatomical investigation. We believe that Gray's will continue to be one of the best guides to a knowledge of anatomy that can be placed in the hands of a medical student.

A Text-Book of Anatomy. Edited by D. J. CUNNINGHAM, F.R.S. Third Edition. London: Henry Frowde and Hodder & Stoughton. 1909.

THE present edition of *The Text-Book of Anatomy*, on the revision of which the late Professor Cunningham laboured up to the end, and which was completed very shortly before his death, presents the same general plan as that of its predecessors. The contributors of the various sections are the same as in former editions. The sections on osteology and myology have been almost entirely rewritten, and the opportunity has been embraced to bring the nomenclature of these sections particularly into line with that agreed

upon by the B.N.A. Commission, of which Professor Cunningham was one of the original members.

The section on osteology, by Professor Arthur Thomson, presents several features which are startling at first sight, *e.g.*, the carpal bones are boldly named according to the international system; the bones of the cranium cerebrale are given as fifteen in number, not eight as in the old description.

We approve of the inclusion of the skiagrams showing the development of the carpal and tarsal bones, and feel that this might be extended with advantage in anatomical text-books. We heartily endorse the opinion expressed by Professor Thomson that, so far as medical students are concerned, less stress should be placed on minute details of the individual skull bones, and that, with perhaps the exception of the temporal bone and lower jaw, the teaching of the skull should be that of the skull as a whole, or in various sections in different planes.

In the section on myology, by Professor A. M. Paterson, many new and improved illustrations will be found.

The article on surgical and surface anatomy, by Mr Harold J. Stiles, a most valuable one, presents several new useful diagrams.

The other parts of the work show evidences of careful revisal and numerous additions. The volume has deservedly taken its place as one of the most important works on anatomy in the language. It is a text-book eminently suited to the needs of students, which in later years, when the student has become a practitioner, will, as a book of reference, furnish him with all the information he is likely to seek.

Synoptic Chart of Cardiac Examination. Arranged by
JOHN D. COMRIE, M.B., F.R.C.P.E. London: John Bale,
Sons & Danielsson, Limited. 1909.

THIS is a somewhat ingenious arrangement of a sliding card, which shows, behind a series of pigeon holes, the main symptoms of thirteen diseases whose outstanding phenomena are cardiac in nature. The scheme seems good, and we have no doubt that there are students and practitioners to whom it will appeal, and who may profit by it.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE A. ALLAN, M.B., CH.B.

MEDICINE.

Further Observations on the Uses of the Ehrlich-Hata Preparation "606" in the Treatment of Syphilis. By J. A. Fordyce, M.D. (*New York Medical Journal*, 5th November, 1910).—The writer begins by commenting on the fact that, although scarcely six months have passed since this drug began to be widely used, already some 15,000 patients have been treated with it, a sufficient number to place it beyond the experimental stage and accord it a firm foothold in the therapy of syphilis.

He then goes on to discuss the questions of dosage, methods of preparation, and administration. As regards the former, as high a dose as 1 gramme is reported without bad effects, but the tendency with most clinicians seems to be to approximate the dose to 0.6 gramme, an amount which Dr. Fordyce has never exceeded.

The different methods of preparing the drug are fully discussed. Dr. Fordyce, having tried the neutral suspension method of Wechselmann, has latterly returned to the use of the alkaline solution of the salt, the original method of Alt, as recently recommended by Dr. Flexner from Ehrlich's laboratory. He is now using the deep intra-muscular injections, but also states that in the 30 cases in which he has used the subcutaneous method he has seen no signs of abscess formation or necrosis, both of which are mentioned by other writers. He notes, however, that in all cases the skin must be well nourished and the injection made under a good thick fold, severe radiating pain being caused if the injection is made into instead of under it.

As regards reaction, pain may occur at once or after two or three hours have elapsed, and in certain cases the severest pain is not experienced until the second or third day, when the local reaction occurs along with elevation of temperature and general malaise. Swelling at the site of the injection begins uniformly on the second or third day, increases for a matter of two days, and after remaining stationary for a week, subsides gradually. The temperature and pulse vary with the local reaction from normal to 100.5° F., and in rare instances a degree or two higher.

A full discussion of the literature on the subject is given under the headings—"Indications," "Results in early lues," "Visceral lues," "Nervous system and eye," "Metabolism," "Fatalities," &c.

While discussing the question of the effect on the Wasserman reaction, Dr. Fordyce notes that in his first series of 11 cases treated with 0.3 gramme, 8 had negative reactions in a period varying from 19 days to three months. As regards recurrences, they were not uncommon in the early days of the drug when such small doses as 0.3 and 0.4 gramme were given; and he notes that in the first series of 16 cases treated by Dr. Nichols and himself with such doses there were two such.

Dr. Fordyce then gives clinical reports of 30 cases treated towards the end of September and the first three weeks of October. The period which elapsed between the giving of the injections and the publishing of this paper does not seem to have been long enough to allow the full results of the drug to be

noted, more particularly as to its effect on the Wasserman reaction, but the results given fully justify themselves. In conclusion, Dr. Fordyce points out the remarkably rapid effect which the drug has in early cases of syphilis, more particularly in these cases which do not respond to mercury and potassium iodide; and also holds that it has a remarkable influence over the bodily nutrition, opinions which he is able to substantiate by instances from among his reported cases. He notes that in this series there were 9 cases of tabes treated before Professor Ehrlich issued his warning against the use of "606" in degenerative nervous conditions, and that although fortunately no untoward symptoms developed, the results were not such as to encourage its further use, at least in advanced cases of tabes or paresis.

Finally, he emphasises his impression that in "606" we possess a remedy which is parasitotropic for protozoan diseases, and acts specifically on lues with an intensity and rapidity superior to mercury and potassium iodide, accomplishing in one injection what they either fail to do or take much longer to effect.—J. R. C. GREENLEES.

Le Rhumatisme Tuberculeux By Alexis Thomson, M.D., F.R.C.S. (*Edinburgh Medical Journal*, December, 1910).—Although this article is chiefly a *résumé* of the book written by Poncet and Leriche and presented to the Academy of Medicine of Paris in 1909, it is worthy of note as embodying views, many of them quite opposed to presently accepted teaching, but which the original investigators consider constitute a new doctrine. The present writer, while expressing no decided opinion, admits that, "As we first read the text of the book and glance at the illustrations, we feel the familiar ground of our pathological experience shifting under our feet; we appear to be in a strange land in which pathological terms have lost their familiar significance. . . . After all, there may be a great deal of truth in his argument."

While many have been in the habit of considering as tuberculous a pleurisy which is not proved to be due to some other specific cause, or "pus" tuberculous from which no organism has been obtained, Poncet would take a further step and ask us to believe that conditions hitherto called rheumatic, but which cannot be associated with a specific pathological cause, are really tuberculous. He thinks that tuberculous rheumatism is the result of an attenuated virus, probably derived from a pre-existing focus elsewhere in the body. He calls it inflammatory tuberculosis, as opposed to specific tuberculosis in which the organism and characteristic changes are present (*Bulletin de l'Académie de Médecine*, June, 1909).

The changes in the joints are non-specific, at least there are no epithelioid or giant cells and there are no bacilli, and the reaction does not differ essentially from that produced by other infections. The pathological pictures do not thus differ from those we recognise under other names.

Clinically the subject is discussed under the following headings:—

1. *The arthralgias*.—These include conditions "erroneously" diagnosed as growing pains, bone diseases, &c., which have made a rapid recovery.

2. *Acute and subacute tuberculous rheumatism*.—This class simulates acute rheumatism, but salicylates do no good. The lesion sometimes disappears as tuberculosis progresses in another part.

3. *Chronic tuberculous rheumatism*, with four varieties—(a) Chronic deforming polyarthritides, apparently identical with conditions described as polyarticular rheumatism and arthritis deformans. In the tuberculous form the skiagram may show some rarefaction of the bones. (b) Chronic polysynovitis. The synovial membrane is swollen, with exudation into the joint and perhaps melon-seed bodies. (c) Dry senile arthritis, similar to morbus coxae senilis. (d) Ankylosing tuberculous rheumatism, of which examples are found in the vertebral column and the sacro-iliac joint.

But other parts than joints are fitted into his new doctrine. Endocarditis, pericarditis, aortitis, and aortic aneurysm may be due to tuberculous intoxication, and he thinks palpitation and tachycardia, so common in tuberculous

subjects, are due to the toxic action on the vagi. Other conditions can only be mentioned, *e.g.*, pleurisy, meningitis, chorea, the sciatica of phthisical patients, Graves' disease through toxic action on the sympathetic, fibromatosis of the pylorus, hydrocele, erythema nodosum, subcutaneous fibrous nodules, myalgias, &c.

For diagnosis, gonorrhœa should be excluded and the serum tests for tubercle applied.

The general treatment for tubercle should be employed. For pain cryogenine seems to have the same action as salicylates have on true rheumatism. Inunction with guaiacol is also recommended. Surgical interference may be employed when ankylosis takes place. Tuberculin is also employed; human tuberculin if the infection is of the bovine type, and *vice versa*.

The present author thinks the subject is worthy of most serious consideration.—GEO. A. ALLAN.

SURGERY.

The Operation of Pyelolithotomy. By S. P. v. Fedoroff, St. Petersburg (*Zeitschrift f. Urologie*, December, 1910).—The operation of nephrotomy as practised for the removal of calculi in the pelvis of the kidney has, during the last few years, been much criticised, and in its place pyelolithotomy has been advocated. The latter is much safer in many ways, *e.g.*, less risk of primary or secondary hæmorrhage; but its opponents have always insisted that it is (or ought to be!) followed by a persistent urinary fistula. Fedoroff, on the contrary, insists that if properly performed there is no such danger after the operation, and points out that even the smallest incision into the cortex of the kidney (as in nephrotomy) may for months, or even years, remain unhealed if there is any obstruction to the flow of urine in the pelvis of the kidney or in the ureter. In his opinion, it is in most cases unnecessary to stitch the opening made in the pelvis, and in order to insure the spontaneous and prompt closure of this incision one has simply to make sure that there is no obstruction to the normal flow of urine. This can be very easily done by passing a bougie into the ureter from the pelvis, and, if necessary, by straightening any abnormal curvature of the ureter, or by fixation of the kidney.

In order to perform the operation of pyelolithotomy successfully, one must be able to expose the renal pelvis and the origin of the ureter satisfactorily.

In many cases it is possible to "deliver" the kidney through the skin incision if one separates it from the fatty capsule. But if the patient is stout, or if the pedicle of the kidney is short, or if there are firm adhesions between the fatty and the true capsule, this may be impossible. In these cases most surgeons have recourse to nephrotomy, but Fedoroff thinks this is unnecessary and inadvisable.

In his operation—"pyelolithotomy *in situ*"—he makes use of the oblique lumbar incision, which, in most cases, gives free access to the kidney. If the Roentgen ray photograph shows that the stone is above the level of the twelfth rib, he resects this.

Having cut through the muscles and fasciæ, the fatty capsule of the kidney is exposed. This capsule is separated from the kidney only on the posterior surface and on the convex edge, the anterior part being left undisturbed.

The kidney is then—partly by pushing from behind, partly by traction on forceps which lay hold of the capsule at the convex edge—partially dislocated inwards and forwards without being much disturbed. In this way one can see the posterior surface of the renal pelvis and the origin of the pelvis without resorting to the drastic method of "delivering" the organ through the skin incision.

The size and form of the stone having been determined by palpation, a

suitable incision is then made in the pelvis, and the stone removed. The interior of the pelvis and the ureter can then be thoroughly examined. There is practically no bleeding, and if there is some sepsis, owing to infection from the renal pelvis, this is much less likely to be extensive than if the whole capsule had been separated.

Fedoroff has performed this operation in eight cases, with successful results. He holds that it ought to be adopted for all cases of pelvic calculus, the older operation of nephrotomy being employed only for calculi in the kidney substance.—ROBERT B. CARSLAW.

"Bloodless" Operations on the Liver. By A. Báron (*Zentralblatt f. Chirurgie*, December, 1910).—In a short paper Báron gives the results of his work on the control of hæmorrhage when operating on the liver in dogs. Having opened the abdomen, he defines the gastrohepatic omentum at its right border, and compresses the portal vein, the hepatic artery, and the common duct with a clamp with rubber-covered blades. Within five minutes the liver is practically bloodless.

A large section of the liver can now be excised: the arteries, veins, bile-ducts which have been cut can be picked up with forceps and ligated, and the edges of the wound brought together in any of the ways suggested by Cecherelli, Bianchi, Stamm, or with catgut. If there is any difficulty in bringing the edges of the wound together, the bleeding which would take place from the parenchyma can be easily prevented by packing.

The great danger of this proceeding is, of course, injury to the portal vein, hepatic artery, or common duct. [It would be easy to isolate the common duct from the other structures, and not include it in the clamp.]

Baron has performed this operation on ten dogs, and has examined these structures at intervals of three hours, one day, three days, two weeks, one and three months after the operation. In none of his cases did he find any evidence of thrombosis of the vessels or stricture of the duct.

The second danger was that of air embolus from the bloodless section of the liver substance. This can be avoided by ligation of the veins in the liver as soon as they are divided.

The third danger was secondary hæmorrhage. This did not take place after any of his operations, owing to the careful ligation of the cut vessels.

This experimental work on dogs can be used in the following operations:—

1. Wounds of the liver. After opening the abdomen and determining the cause of the hæmorrhage, the portal vein and hepatic artery can be clamped, and the wound in the liver attended to as described above.

2. Carcinoma of the gall-bladder. The gall-bladder, with the adjacent portion of the liver, can be removed, and the wound in the liver treated.

3. Hepato-cholangiostomia interna (Hirschberg).—ROBERT B. CARSLAW.

Grossich's Method of Sterilisation of the Skin. By C. Hesse (*Zentralblatt f. Chirurgie*, April, 1910).—In this short communication Hesse refers to the ever increasing popularity of this method of sterilisation of the skin. Only a few have raised the objection that its use may result in a stubborn nasal catarrh on the part of the operator or his assistant. This, Hesse thinks, is due to a misunderstanding. Grossich, in his original paper (*Zentralblatt f. Chirurgie*, October, 1908), advocated the use not of the official tincture of iodine, but of a 10 to 20 per cent solution of the tincture in alcohol.

Hesse himself has, since December, 1908, constantly used a 20 per cent solution of the tincture in alcohol, with good results and no inconvenience. He has seen neither eczema of the skin of the patient, nor nasal catarrh in the surgeon or his staff.—ROBERT B. CARSLAW.

Sterilisation of the Skin with Tincture of Iodine. By A. Grossich (*Zentralblatt f. Chirurgie*, May, 1910).—Grossich acknowledges the

widespread interest that has been taken by the surgical world in his method of sterilisation, which he first published in the *Zentralblatt f. Chirurgie* in October, 1908, and on which he read a further paper at the International Congress in Budapest in August, 1909. He points out that, notwithstanding his assertion (which has been proved in thousands of cases) that application of the diluted tincture of iodine is sufficient without any preliminary cleansing of the skin, some surgeons use benzine, ether, or alcohol before applying the iodine. This, he thinks, is both unnecessary and useless.

—ROBERT B. CARSLAW.

DISEASES OF CHILDREN.

The Prognosis of Congenital Syphilis. By Karl Hochsinger (*Ergeb. der inneren Medizin und Kinderheilkunde*, Band 5, 1910, p. 84).—In a somewhat bulky paper the author gives his experiences of congenital syphilis, and discusses all the various aspects of this extensive subject. He answers all the questions entirely from the results of his own observations, and it is owing to this purely personal element that the article is of such interest.

Twenty years ago he delivered a paper before the Heidelberg Medical Society, when he drew conclusions from 380 cases observed by himself. Since then he has written nothing on the subject, but has had the opportunity of observing 436 cases, giving a total of 816. 208 of these cases, emanating from 134 families, were under observation for a longer period than four years.

He divides the subject into two—antenatal and postnatal prognosis.

The first question discussed is the viability of the product of conception. The cases are divided into three classes, according to the class of society to which they belong.

1. In this series, consisting of 258 women with 1,220 pregnancies, mostly illegitimate, 51 per cent ended in abortion, 44·7 per cent were born alive, but developed syphilis soon afterwards, and 3 per cent were born healthy, and remained so as long as they were under observation, which, however, was not long.

2. In a second series of 134 women, who were observed over a much longer period and springing from a better class of society, of 253 pregnancies, 44·4 per cent were dead born, 46·2 per cent were born syphilitic, and 7·7 per cent were born healthy and remained so.

3. In the third series comprising 11 private families, in only one of which was the mother definitely syphilitic, and observed over a period of twenty years, there were 29 products of conception, of which 33 per cent were born syphilitic, and 66 per cent were born healthy. In this series all the patients had been well treated, and not one had married sooner than three years after the infection. In 5 of these 11 families there was not a single syphilitic child born. In 4 of the families renewal of the treatment after the birth of the first syphilitic child caused a cessation of the transmission of the disease. Thus, according to Hochsinger, the transmissibility of the disease depends to no small extent on the social condition of the parents.

That the fate of the product of conception depends in no small measure on the evidence of disease in the parents is shown by the following statistics:—

1. In 38 families, where the father was undoubtedly syphilitic but the mothers remained free from symptoms, there were 53 still births, 80 living syphilitic children, and 37 healthy children, *i.e.*, 22 per cent.

2. In 11 families, where the mother was definitely syphilitic but the father healthy, there were 19 still births, 21 living syphilitic children, and 2 healthy children, *i.e.*, 5 per cent.

3. In 63 families, where the father denied syphilis and the mother presented

no symptoms, there were 101 still births, 110 living syphilitic children, and 14 healthy children, *i.e.*, 11 per cent.

4. In 22 families, where both parents were definitely syphilitic, there were 61 still births, 44 living syphilitic children, and no healthy children.

In this last series, although there is the highest proportion of syphilitic children, the parents had been as heroically treated as in any of the other series, so that the virulence of the infection depends on the fact that both parents were syphilitic.

While referring in detail to cases where the mother was definitely syphilitic, and father free from symptoms of lues, he quotes the following histories:—

1. A 23 years' old woman, who had been two and a half years before her marriage infected on the nipple, was energetically treated with mercury and ceased to present symptoms. Her husband was healthy and was unaware of his wife's previous history. She gave birth to several stillborn children and several living syphilitic children, but all the time her husband did not present symptoms of having been infected.

2. A 30 years' old woman, with healed gummatous syphilis of the nose, married a healthy man, and though she gave birth to several syphilitic children her husband continued free from any luetic manifestations. Hochsinger has observed 11 families in which the mothers before marriage had been infected, and in which the fathers were healthy and remained so, although of the 42 products of the conception only 2, or 5 per cent. were born free from syphilis.

The birth of healthy and diseased children alternately he has observed, but never where the mother was definitely syphilitic. Frau P., in concubinage had four healthy children, and after the death of her lover, when the above children were 3, 7, 5, and 3 years old respectively, married a latent syphilitic, and gave birth soon afterwards to a 7 months' old macerated fetus. Shortly afterwards she was delivered of a healthy child, which remained healthy for four years. Still later followed two still births, and then a living but syphilitic child. Neither parent had been treated since their marriage.

Frau S. had during her first marriage given birth to two syphilitic children, who had been under observation for years. The mother always appeared healthy, had never been treated, and married again soon after the birth of the second child, and had two healthy children. In another case a healthy child of the second marriage was infected during its second year from the condyloma on the mouth of a syphilitic child of the first marriage, the mother being the same in both instances.

That syphilitic children can appear in the midst of a row of healthy children is shown by the following family history:—

Frau R. had two healthy children, then a syphilitic child which died at the age of 10 days, and, finally, other three healthy children. Hochsinger concludes that her syphilitic child was the result of conception with a syphilitic man, not her husband.

Another interesting case recently seen by the author further demonstrates true paternal syphilis. A syphilitic infant, giving a positive Wassermann reaction, was born to two parents who presented no symptoms of lues, and who both gave a negative Wassermann reaction. The mother admitted having had connection with another man. Mother and father were kept under observation for some time, and still gave a negative Wassermann reaction.

Frau B., three times married, had with each of her first and third husbands two living syphilitic children, but with her second husband three healthy children. The mother and second husband were healthy, and never showed symptoms while the first and third husbands did.

It is not uncommon, however, when the father undergoes intermittent treatment to have the birth of healthy and diseased children alternately.

The duration of the transmissibility of the disease is very variable, and follows no rule, but is much longer when the mother is infected. In 38 families where the mother was undoubtedly free from the disease, the longest

period that elapsed between the infection of the father and the appearance of a healthy child was eleven years. In the cases where the mother was definitely syphilitic the longest period that elapsed between infection of the mother and the birth of a healthy child was twenty-three years. Hochsinger's statistics regarding this point are the following :—

In 1 case infectivity lasted 23 years.			
„ 1	„	„	22
„ 4 cases	„	„	18
„ 2	„	„	16
„ 4	„	„	15
„ 4	„	„	14
„ 4	„	„	between 5 and 14 years.

In some of the above cases the mother had married two or three husbands, the latter of which were free from syphilis, and yet they persisted to bear syphilitic children.

When the mother is infected treatment is much less satisfactory than when the father alone is infected. Hochsinger has never seen treatment of a luetic mother followed by the birth of a healthy child; even in private practice, where the conditions are most favourable, and both parents have been actively treated, a period of two years is the shortest that he has known to elapse between the birth of a diseased and of a healthy child, and which could be ascribed to the treatment. In one quoted example a mother had been infected during her first pregnancy, and a syphilitic but living child was the result. In spite of active treatment three still births resulted, then two living but syphilitic children. At this period her husband died of general paralysis, and she married again, and, fourteen and sixteen years after infection, gave birth to two living but syphilitic children.

When the father alone is infected, treatment is fairly satisfactory.

Hochsinger does not consider it necessary to treat a woman, free from syphilis or showing no syphilitic manifestations, who has been impregnated by a syphilitic man, and that even when she presents a positive Wassermann reaction, although he admits that by treating the mother during pregnancy one is indirectly treating the infant. On two occasions he has carried out this method in practice, and been successful in obtaining the birth of healthy children. The father should, of course, be actively treated.

Hochsinger, in opposition to many authors, believes that a wife not showing symptoms of the disease, but married to a syphilitic man, and the mother of syphilitic children, may or may not be syphilitic. Such women are almost invariably immune (Colles' law). Many authors conclude from this law that these women are syphilitic, and see in the frequent positive Wassermann reaction, and the occasional finding of spirochaetes in the inguinal glands by Buschke, support for their view. It is quite true, Hochsinger admits, that such women may be syphilitic or immune to syphilis, but he believes that they may be syphilis free.

The above-quoted cases of paternal syphilis lend support to his view, and are explained by the experiments of Neisser, who has shown that it is possible to immunise apes by enclosing in their bodies the syphilitic virus in collodion sacs. In this way toxins, but not spirochaetes, are permitted to pass into the tissues of the body, and induce the formation of anti-bodies.

In the case of pure paternal congenital syphilis, the mother has absorbed toxins but no spirochaetes from the infected foetus, and has thus become immune. Whatever the theory, the fact remains that cases, observed under most favourable circumstances in private practice, exist, where mothers have borne to their first and infected husbands syphilitic children, and shortly afterwards healthy children to their second and healthy husbands. He concludes this part of his paper by another example in support of the above opinion, that pure paternal congenital syphilis exists. A luetic man impregnated his servant maid, who gave birth to a syphilitic child. She was under

Hochsinger's care all the time, and had been apprised of her danger, and advised to report herself at once if any suspicious symptoms should appear. No evidence of syphilis declared itself, and one year later, in spite of the author's remonstrance, she married a healthy man, and gave birth at short intervals to two healthy children.—LEONARD FINDLAY.

DISEASES OF THE THROAT AND NOSE.

Specific Affections of the Throat. (*Jour. Laryn., Rhin., and Oto.*, January, 1911; and *Folia Therapeutica*, January, 1911).—Different forms of arsenical preparations have been tried in specific conditions of the nose and throat during the past two or three years, and although favourable accounts from time to time have been received from different authorities, the views held by Dr. Levy, of Aix-les-Chapelle, have been largely endorsed by laryngologists. It takes many years before the profession can judge fully of the value of a drug, and there is always a possibility of relapses. Now, in the opinion of Dr. Levy and those who accept his views, the administration of mercury still remains the most important remedy, although Continental authorities are strongly of opinion that the administration of this drug by the mouth is not as useful as other methods, such as inunction.

The famous drug "606," Ehrlich-Hata's new remedy, and now sold under the name of salvarsan, is still creating a considerable amount of interest. There can be no doubt that the relief in throat affections, just as in other regions of the body, is marked, and no one seems to doubt that a valuable remedy has been obtained, and one which is very often extremely useful in cases not amenable to the ordinary treatment by mercury and iodides.

Those who have seen improvement in the conditions of the throat where the ordinary remedies have failed, and who have also witnessed the rapid disappearance of the secondary symptoms of the disease in the same region, cannot but be impressed by the possibility of this new remedy. It may be said, however, that when Ehrlich's views were first published in Königsberg there was a very great amount of enthusiasm, but in other Continental places, such as Berlin, a more critical view has been taken of the situation. The drug has passed from the experimental stage and is now being handed over to the ordinary medical man. In due time we will be better able to judge of how far this new remedy is going to displace the older and better known ones. Much work has yet to be done, and amongst other questions is, what is the best way of administering the drug—whether subcutaneously, intramuscularly or intravenously? And there is also yet something to be done from the chemist's standpoint about the preparation of the solution, and whether it should be neutral or alkaline or acid.

There would seem to be a general tendency at present to doubt the original assumption that a single injection would accomplish a cure of the disease, and consequently it is not unlikely that experience will point to repeated injections controlled by bacteriological, Wassermann, or other tests.

—JOHN MACINTYRE.

Direct Method of Examining the Naso-Pharynx and the Posterior Parts of the Nose.—Dr. A. von Gyergai, Klausenburg (*Trans. of the Society of German Laryngologists: Jour. of Laryn., Rhin., and Oto.*, October, 1910), adopts the method of introducing a straight tube into the naso-pharynx, the head of the patient being dependent and the soft palate drawn forward. In this way the inner end of the tube lies close to the posterior margin of the hard palate while the outer end comes in contact with the teeth of the lower jaw. The tubes are from 8 to 10 centimetres in length and vary in diameter, and they are easily affixed to Brüning's electroscope.

If mucus be present, a suction apparatus is required to remove it. In this way the adenoid region can be seen, the lateral walls of the naso-pharynx, the mouth of the Eustachian tube, Rosenmüller's fossa, and the edge of the septum. Sometimes part of the middle turbinated bone can be seen as well. Between the middle turbinated body and the septum the anterior walls of the sphenoidal sinus can be seen, and in front of that the superior turbinal and superior meatus. —JOHN MACINTYRE.

Ozæna. — Dr. Møller, Hamburg (*Trans. of the Society of German Laryngologists: Journ. of Laryn., Rhin., and Oto.*, October, 1910), has, in the Eppendorf Hospital, Hamburg, tried the apparatus devised by Pincus in 100 cases of ozæna, and is of opinion that the atmocautis does give relief in many cases of ozæna. In the first instance, the nose is easily freed from crust by a solution of peroxide of hydrogen, afterwards the membrane is anaesthetised by means of spraying and rubbing with a 10 per cent solution of cocaine. Vaseline is afterwards applied to the external parts of the nose, upper lip, and nostril. The hot air, 116° to 118° F., is allowed to pass through each nostril for from 1 to 3 seconds. In one case an otitis media was observed, but as a rule the treatment did not prove dangerous and gave relief to the feeling of pressure in the head, headache, foul smell, and crusting.

—JOHN MACINTYRE.

MATERIA MEDICA AND THERAPEUTICS.

Serum Treatment of Hæmorrhagic Disease of the New-born. By Ed. B. Bigelow, Worcester, Mass. (*Journal of the American Medical Association*, 30th July, 1910). — In this paper reference is made to Weil's work, in which he showed that the non-coagulability of hæmophilic blood is due to a lack of some substance which normal serum supplies, and that the injection of fresh blood serum into hæmophilics, either intravenously or subcutaneously, introduces the necessary coagulating ferments, and probably also helps the system to produce such ferments on its own account. The writer regards the hæmorrhagic disease of the newborn as a condition in which this method of hæmostasis is especially applicable. The condition is practically confined to the first ten days of life and is self-limited. The most common sources of severe hæmorrhages are the gastro-intestinal tract, umbilicus, mouth and nose, ecchymoses of the skin and combinations of these. The mortality in reported cases varies from 62 to 79 per cent. The disease is to be differentiated from true hereditary hæmophilia, in that the infants affected are nearly as often females as males; that those that bleed in the first few days of life, if they recover, rarely manifest any such tendency later; and that true hæmophilia does not usually manifest itself before the end of the first year. In this disease the hæmorrhages are due to a cause which is but temporary, so that no effort should be spared to save the infant, since if it survives a few days there is every probability of continued health.

Three cases are reported. The first child began to bleed when 48 hours old, and about the seventy-fourth hour was apparently moribund, in spite of the internal administration of calcium lactate and the local application of epinephrin to the umbilicus. The second child began to bleed when 38 hours old, and for nine hours thereafter passed hourly motions of dark tarry material and bright red blood. In the third case hæmorrhage occurred on the second day; calcium lactate had no effect; and on the fifth day the baby was moribund. The treatment adopted in each case was the injection of 5 c.c. of clear rabbit serum, subcutaneously, immediately after it had been procured from the animal. The result in each case was the almost immediate control of the hæmorrhage, and in no case did any untoward symptoms follow.

It is noted that Dr. John E. Welch has treated this disease with human

instead of animal serum, thus avoiding the sensitisation of the patients to a foreign serum and the possible danger of anaphylaxis, if the same serum were ever administered at a subsequent time.—R. SPEIRS FULLARTON.

The New Treatment of Syphilis (Ehrlich-Hata) By Henry L. Elsner, Professor of Medicine, Syracuse University (*Journal of the American Medical Association*, 10th December, 1910).—In this paper Professor Elsner gives an account of a visit to Ehrlich in Frankfurt in July, 1910, and of his subsequent observations of the treatment of syphilis in Berlin, in Wechselmann's clinic at the Rudolph Virchow Spital, and in the Kraus clinic at the Charité, under Citron. Precise details are given as to the method of preparing "606" for intramuscular injection, and as to the preparation of the patient. With his present experience Professor Elsner would absolutely refuse to inject any patient outside the walls of a well-appointed hospital, sanatorium, or a home where thorough asepsis can be observed. As to contraindications to the use of "606"—sickness of any kind, particularly acute infections, including ordinary colds, bronchial disturbances and acute indigestions, positively contraindicate its use. Degenerative diseases of the nervous system *far advanced* not only contraindicate the treatment, but offer direct danger. These include cases of paresis and locomotor ataxia, with associated optic neuritis. In any case showing optic neuritis or other pathologic changes in the background of the eye there is danger of sudden increase of ocular lesions or arsenical blindness. Aged and decrepit patients with advanced organic disease of vital organs, particularly affecting the cardiovascular system, arteriosclerosis, aneurysm or cerebral apoplexy, should never be injected. All organic diseases of nonsyphilitic origin offer contraindications. After referring to the Wassermann reaction, to the varieties of syphilitic lesions treated, to hereditary syphilis, and to the relative merits of intramuscular and intravenous injections, Professor Elsner draws the following conclusions:—

1. The treponema (*spirochaeta pallida*) is positively destroyed, and the living contagion of syphilis is promptly removed by the Ehrlich-Hata remedy.

2. The preparation "606" promptly and favourably affects visible and palpable syphilitic lesions. It also removes deep-seated gummata.

3. The remedy stays the destructive and onward march of syphilitic ulcerations and causes their healing in a surprisingly short time.

4. It is more rapid in its effect on specific disease than any other known remedy.

5. It is likely to prove more valuable than any other remedy in the treatment of the specific diseases of most internal organs.

6. It cannot replace cicatricial tissue, the result of nature's reparative processes: neither does it affect favourably chronic degenerative diseases of the nervous system, as paresis and system-diseases of the cord, in which there is a break in the continuity of nerve structure, though in some cases it seems to influence favourably the continuous crises of locomotor ataxia.

7. In all cases it causes a leucocytosis and the formation of antibodies.

8. It materially modifies, and in most cases ultimately negatives, the Wassermann reaction.

9. It unquestionably floods the circulation with endotoxins resulting from the death of millions of spirochaetes, and in all probability an antitoxin is developed in the blood serum. These facts must be thoroughly considered in connection with the treatment.

10. In acute and threatening deposits in vital organs the effect of "606" will often prove life-saving because of its prompt action, and for that reason it is preferable to the iodides or mercury.

11. It ought not to be given to ambulatory patients; neither is it safe in the hands of the careless or those who have not seen it used and learned the difficult method of its preparation for injection.

12. The hospital, where all things required in the preparation of the mixture of "606" can be sterilised, and where the centrifuge can be used, is preferable to any other place for its injection.

13. Patients injected should be kept quiet and in bed during seven days under close observation, and for a longer period if indications demand.

14. Second injections, if indicated, should not be given in less than eight weeks after the first.

15. Contraindications are as stated above.

16. Congenital syphilis demands the treatment either directly or indirectly as suggested in the paper.

17. The living contagion is destroyed by "606"; hence its early use can prevent the spread of syphilis.

18. In occasional well-selected cases the use of the iodides after the method of Weebsehlmann will increase the efficacy of "606" when second injections are necessary. From two to three weeks should lapse after thorough mercurial treatment, when this has been used, before the injection of arsenobenzol.

19. In spite of the fact that nearly all agree that the effect of "606" is magical, sufficient time has not elapsed to justify the conclusion that a single injection of the drug will prevent what we now recognise as the secondary and tertiary stages of syphilis.—R. SPEIRS FULLARTON.

Books, Pamphlets, &c., Received.

Manual of Medicine, by Thomas Kirkpatrick Monro, M.A., M.D. Third edition. London: Baillière, Tindall & Cox. 1911. (15s. net.)

A Text-Book of Public Health, by John Glaister, M.D., D.P.H.Camb., F.R.S.E. Second edition. With 133 illustrations. Edinburgh: E. & S. Livingstone. 1910. (12s. net.)

Manual of Bacteriology, by Robert Muir, M.A., M.D., F.R.C.P.Edin., and James Ritchie, M.A., M.D., F.R.C.P.Edin. Fifth edition. With 174 illustrations in the text and 6 coloured plates. London: Henry Frowde and Hodder & Stoughton. 1910. (10s. 6d. net.)

On Acute Intestinal Toxæmia in Infants, by Ralph Vincent, M.D. (An address delivered before the Glasgow Obstetrical and Gynæcological Society on 23rd November, 1910.) London: Baillière, Tindall & Cox. 1911. (3s. 6d. net.)

An Introduction to Surgery, by Rutherford Morison, M.A., M.B., F.R.C.S. Edin. and Eng. With 146 illustrations in the text, and 5 coloured plates. Bristol: John Wright & Sons, Limited. 1910. (8s. 6d. net.)

Outlines of Zoology, by J. Arthur Thomson, M.A. Fifth edition, revised, with 420 illustrations. London: Henry Frowde and Hodder & Stoughton. 1910. (12s. 6d. net.)

The Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Compiled from Official Sources. Twenty-seventh annual issue. London: Charles Griffin & Co., Limited. 1910.

Medical Diagnosis, by W. Mitchell Stevens, M.D., M.R.C.P. With 177 illustrations. London: H. K. Lewis. 1910. (25s. net.)

The Cancer Problem, a Statistical Study, by C. E. Green, F.R.S.E. Edinburgh: William Green & Sons. 1911.

A Manual of Nursing, by Margaret Frances Donahoe. Illustrated. New York and London: D. Appleton & Co. 1910. (7s. 6d. net.)

The Dawn of the Health Age, by Benjamin Moore, M.A., D.Sc., M.R.C.S., L.R.C.P. London: J. & A. Churchill. 1911. (3s. 6d. net.)

Radium, Its Physics and Therapeutics, by Dawson Turner, B.A., M.D., F.R.C.P.Edin., M.R.C.P.Lond. London: Baillière, Tindall & Cox. 1911.

The Ship-Surgeon's Handbook, by A. Vavasour Elder, M.R.C.S., L.R.C.P. Second edition. London: Baillière, Tindall & Cox. 1911.

GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR
THE FIVE WEEKS ENDED 21st JANUARY, 1911.

	WEEK ENDING				
	Dec. 24.	Dec. 31.	Jan. 7.	Jan. 14.	Jan. 21.
Mean temperature, . . .	44·7°	44·7°	36·2°	39·7°	41·9
Mean range of temperature between highest and lowest,	9·1°	9·2°	11·9°	8·6°	8·9°
Number of days on which rain fell,	7	5	4	6	3
Amount of rainfall, . . ins.	0·51	0·34	0·44	0·72	0·07
Deaths registered, . . .	223	245	242	281	259
Death-rates,	13·2	14·5	14·1	16·3	15·1
Zymotic death-rates, . . .	0·5	0·7	1·2	1·1	1·4
Pulmonary death-rates, . .	4·2	3·6	3·4	3·8	3·8
DEATHS—					
Under 1 year,	39	35	55	50	42
60 years and upwards, . .	64	69	59	74	70
DEATHS FROM—					
Small-pox, . . . . .	...	...	...	...	...
Measles, . . . . .	...	...	...	2	...
Scarlet fever,	1	2	2	2	2
Diphtheria,	6	5	6	3	4
Whooping-cough,	3	1	7	9	12
{ Fever, . . . . .	...	1	2	2	2
{ Cerebro-spinal fever, . .	...	1	...	2	1
Diarrhoea,	5	9	9	5	6
Croup and laryngitis, . .	...	1	...	...	...
Bronchitis, pneumonia, and pleurisy,	52	46	46	54	50
CASES REPORTED—					
Small-pox, . . . . .	...	...	...	...	...
Cerebro-spinal meningitis, .	...	4	1	2	1
Diphtheria and membranous croup,	61	40	42	37	43
Erysipelas,	25	25	18	29	29
Scarlet fever,	88	63	67	57	75
Typhus fever, . . . . .	...	...	...	1	...
Enteric fever,	3	19	14	13	13
Phthisis,	39	48	27	39	55
Puerperal fever,	2	3	4	2	...
Measles,*	29	13	9	4	15

* Measles not notifiable.

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ORIGINAL ARTICLES.

WHAT ARE WE DOING TO COMBAT INFANT
MORTALITY?

By LEONARD FINDLAY, M.D.,

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Dispensary Physician to Western Infirmary and Sick
Children's Hospital, Glasgow.

THAT the cry of the infant has at last been heard, is sufficiently evidenced by the energy displayed by municipalities and philanthropic bodies alike in their attempts to lessen the unnecessarily high infantile death-rate. The institution of milk depôts, and the adoption of the recently passed "Notification of Births Act," are only two of the measures selected by our municipalities, while, on the other hand, the formation of mothers' clubs and visitation societies is the means by which independent philanthropic bodies are doing their share in this great and beneficent work.

It is difficult, and perhaps at the present moment impossible, to estimate correctly the relative values of all these various endeavours, but to my mind there is one great drawback to all this machinery. It lacks supervision: there is

too much of the lay element and too little of the medical for it to be productive of the greatest possible amount of good.

Let it be admitted, however, for the sake of argument, that the advice given at the various milk depôts and by the many infant visitors is good and proper, there always remains the difficulty of carrying the advice into practice. One might as well advise a poor man to winter in the Riviera as ask many of these poor mothers to carry out the difficult and exact methods of feeding scientifically a sick child. The hygienic conditions of the home alone are not infrequently quite incompatible with recovery. Besides, it is absolutely essential to have some place for the indoor treatment of the most severe cases, not only for the sake of the individual children admitted, but also, and in no small measure, for the benefit of medical science. It is only in a hospital with the children under strict medical supervision that any real progress can be made.

In many of the children's hospitals throughout the country infants are of course admitted, but not infrequently children between the ages of 2 and 12 years only are eligible for admission. In the Glasgow Hospital for Sick Children this is the rule, though special cases under 2 years may be admitted. Of all the patients attending the outdoor department of this hospital during 1909, roughly 25 per cent were under 1 year of age, while in the hospital only 15 per cent of the children were under 1 year, and of these only 45 per cent were suffering from medical complaints. During the same period 1,214 children suffering from gastro-intestinal disturbances attended the dispensary, while in the hospital there were only treated 28, 10 of whom were under 1 year. At the hospital there were treated 15 cases of marasmus with a mortality-rate of 40 per cent, and all under 2 years of age, while 365 examples of this condition were reported at the dispensary. These figures are worthy of our consideration, and demonstrate pretty conclusively the inadequate provision that is made for the infant. The high mortality-rate from marasmus shows also that we have much to learn regarding its treatment. Careful study of the disease in a well-equipped hospital is the quickest and surest method of making progress in this direction.

So far as I am aware, there is only one special hospital for infants in Britain, the Infants' Hospital in London under the care of Dr. Ralph Vincent, and founded by the generosity of the Mond family. No doubt there is some good work being

done in this country in the various children's and poor-law hospitals, but not, I am sorry to say, to the same extent that prevails in America and on the Continent. A survey of the literature of this branch of medicine is sufficient to convince one of this fact.

The numerous milk depôts throughout the country, which have been founded on the lines of Pierre Budin's Institute in Paris, though productive of much good, lack one of the essential features of the department they seek to emulate. There is no provision made for the indoor reception of the most severe cases. The importance of such a ward is most evident from a study of Budin's work, and Budin himself says that the mere bringing of many weaklings to the consultations, whereby they are subjected to the influence of the cold during the winter months, is fraught with more danger than many can recover from. A notable part of his brilliant and interesting work is the demonstration of the influence of cold on premature and weakly infants, and he has conclusively proved that by elevating their lowered bodily temperature, by means of incubators, &c., many lives can be saved.

How different are the measures adopted for the preservation of infant life in some other countries, and in the present paper I wish specially to show what Germany is doing in this great fight. I fancy that some of my critics will retort that this is as it ought to be, since in Germany the rate of infantile mortality is much higher than in Britain. However that may be, there is much of their work that we could with advantage copy.

Throughout Germany one finds two classes of institutions that are interested in the welfare of the infant, the "*Fürsorgeanstalte*" and the children's and infants' hospitals.

The "*Fürsorgeanstalte*" are what might be called "infant consultations," and represent our milk depôts. They are situated in practically every town in Germany, and in large cities like Berlin one is found in each of the poor districts. This is a point of no small moment, since, when a child requires daily attention, such can be obtained with the least possible inconvenience to the household. Anyone, who has much experience of public dispensaries, must appreciate the amount of time lost in travelling long distances, and thereafter waiting for advice, and, as in the present instance, where the mother must accompany the child, the disorganisation of the household that will ensue can be easily imagined. There is no doubt that, if such undertakings are to be productive of

their greatest possibilities, they must be convenient to those who are intended to take advantage of them.

The "Fürsorgeanstalte" are staffed by two or three physicians specially interested in pediatrics, and by a sister and several nurses. They are open daily for two or three hours, when all are admitted free of charge. The infants are weighed and examined, and advice is given as to treatment. Breast-feeding is encouraged, and premia are given for success in this line. In instances where the mother's milk is not available, or considered unsuitable, the requisite milk mixture is prescribed and given free of charge. Many of these mixtures are too difficult for the ordinary housewife to make, and yet they are of extreme importance to the child. The nurses visit the homes of the children, and see that the most is being made of the existing facilities. The condition and health of the mother are, of course, also taken into consideration.

The good that results from these services is apparent to anyone who pays a visit during a consultation. The children are clean, and the mothers are taught how to dress, undress, and generally look after them; and the spirit of competition engendered by the premia lends a fillip to their energies on the infants' behalf.

However important such institutions are, the infants' asylums and hospitals are perhaps more so, as they have a more far-reaching effect, being the training schools for the disciples (medical and nursing alike) of pediatrics. As has been previously mentioned, it is often only by placing many a sick child under strict medical supervision that its life can be spared.

Hospitals for infants are not uncommon in Germany. In Dresden, a town of 515,000 inhabitants, there is one containing 60 beds: in Frankfurt-on-Main, with 348,000 inhabitants, one of the pavilions of the municipal hospital is devoted to children and contains 90 beds, 45 of which are set apart for infants. In Leipzig and Heidelberg, with populations of 502,000 and 48,000 respectively, a number of wards in the children's hospitals are specially constructed for the treatment of babies under 1 year.

In Berlin there are several infants' hospitals, one of which, the "Kaiserin Auguste Victoria Säuglingsheim," a present from the nation to the Kaiser and Kaiserin on the occasion of their silver wedding, is perhaps the most sumptuous of its kind in the world. This hospital is situated in Charlottenburg, in a wooded park on the outskirts of the town, and

contains, in addition to some 100 beds for infants, a maternity department, so that children can be brought under observation from the first, a point of no small importance in the opinion of the present directors. The wards are lofty, and constructed after the latest fashion with rounded corners and glazed-tile walls, and each communicates with a spacious balcony. A large and separate milk kitchen, which can be easily and thoroughly disinfected and where all the milk mixtures are prepared, is a special feature of the hospital. It is equipped with the most modern appliances for sterilising, cooling, and filling feeding-bottles, so that there is a minimum of risk of contamination. The hospital has its own farm attached, where the cows are kept under hygienic conditions. In addition, there are chemical and pathological laboratories, and a residency for voluntary assistants who wish to study this branch of medicine.

In Berlin there is also an infants' department of 25 beds in the children's section of the Charité, in the Augusta Hospital under Babinsky, and the Municipal Infants' Hospital with 100 beds. The Municipal Orphan Home, which is in the same building as the Municipal Infants' Hospital, contains a further complement of 150 beds. Both of these institutions are under the supervision of Professor Finkelstein, and were started some ten years ago with 50 beds.

The Orphan Home is, of course, as its name implies, primarily intended for orphans, but fatherless children, whose mothers are ill or in necessitous circumstances, are eligible for admission. Many of the children admitted are illegitimate. Hither all such children are brought, examined by the medical officers, and if diseased are admitted immediately to either of the hospitals. If healthy they are at once, and always when convalescent, boarded out with reliable women in the town or country. Such women receive for nursing these children, in addition to food and clothing, 30s. per month in the case of convalescent children, and 21s. per month for healthy children. The children are ever afterwards kept under observation, the mothers-by-adoption bringing them periodically to the hospital for inspection. Even when leaving school these orphan children are examined by the medical officer, who certifies as to the child's physical suitability for following any particular employment.

In both the Municipal Infants' Hospitals, in the Charité, and in the "Kaiserin Auguste Victoria Säuglingsheim" wet nurses are much employed. In the former institutions (municipal) with 250 beds as many as 20 may be resident

at one time. The various physicians have great faith in the therapeutic value of mother's milk in severe intestinal diseases, and their results, I must admit, entirely justify their opinions. The wet nurse in return for her milk receives a home, food and clothing for herself and her child, and in addition a sum of money proportionate to the amount of milk she can put at the disposal of the hospital, but in no instance more than 20 marks (£1) per month. They, as a rule, perform the duties of ward maid, and help to a certain extent in the care of the children.

Only healthy women and mothers of healthy children are, of course, employed, and, in order to avoid the dissemination of disease by latent syphilitics, the "Wassermann test" is done in the case of both mother and child, and, to hinder infection of a wet nurse by a symptomless syphilitic infant, no child under 3 months of age is put directly to the breast; it receives the human milk out of a bottle.

Such, then, is only a brief summary of the chief institutions in Germany for infant protection and culture, but it is sufficient to show us how far we have yet to travel ere we can cope with our Teutonic neighbours, not only in the conservation of infantile life, but in the development and dissemination of knowledge in this important branch of medicine.

THE DR. JAMES WATSON LECTURES ON RECENT ADVANCES IN HÆMATOLOGY.

By WALTER K. HUNTER, M.D., D.Sc.,

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(Concluded from p. 108.)

Paroxysmal hæmoglobinuria.—Paroxysmal hæmoglobinuria is usually grouped with diseases of the urinary organs, but as the hæmoglobin in the urine is essentially dependent on there being free hæmoglobin in the blood, it seems better to speak of the condition as a hæmoglobinæmia, and to classify it along with the diseases of the blood.

We have already seen that even under normal conditions a destruction of red corpuscles is continually going on in

the spleen, or some other part of the vascular system, and as a result a certain amount of hæmoglobin is constantly being liberated. The blood plasma, however, has not been shown to contain free hæmoglobin, and it would seem, therefore, as if the liberated hæmoglobin were quickly broken up into its component parts, globulin and hæmatin. From the hæmatin the bilirubin of the bile is doubtless derived: and the amount of bilirubin formed would seem to be some measure of the amount of free hæmoglobin—that is, a measure of the destruction of red corpuscles that has been going on. When, however, the hæmolysis has been excessive—when, for example, one-sixtieth¹ of the total hæmoglobin of the blood has been liberated, then the free hæmoglobin apparently cannot be dealt with in this way, and it is therefore eliminated by the kidneys as hæmoglobin, giving rise to the condition called hæmoglobinuria. So that hæmoglobinuria not only means that there is a hæmoglobinæmia, but also that there has been a very large quantity of hæmoglobin liberated.

Any agent, then, that can produce an excessive hæmolysis will determine a hæmoglobinuria. Such drugs, for instance, as carbolic acid, chlorate of potassium, pyrogallie acid, and naphthol produce a hæmoglobinuria. Saponin, ricin, and certain snake venoms act in the same way. Hæmoglobinuria, too, may occur in the course of some of the acute infective fevers, such as scarlet fever or small-pox. It is also met with as a complication of malaria, constituting the “blackwater fever” of that disease: and sometimes it is one of the phenomena of Raynaud’s disease. In paroxysmal hæmoglobinuria the hæmoglobin in the urine is the essential feature of the malady.

In all these conditions the hæmolysis would seem to take place in the general circulation: and it has been shown that the blood serum has a pink colouration (due to the presence of free hæmoglobin) before there is any appearance of hæmoglobin in the urine, and that the blood serum regains its normal colour prior to the disappearance of the hæmoglobinuria.

As the result of a paroxysm of hæmoglobinæmia the blood count may show loss of a million or more red cells, but this deficiency is usually very quickly made up again, the corpuscles being more quickly renewed than the hæmoglobin. The polynuclear leucocytes, too, are more actively phagocytic, as well as slightly increased in number, during

¹ McAlister, *Quarterly Journal of Medicine*, July, 1909, p. 368.

a paroxysm, and there seems reason for believing that they take an active part in the destruction of the red cells. The red cells themselves, however, do not seem unduly vulnerable in paroxysmal hæmoglobinæmia.

The nature of the hæmolysis in paroxysmal hæmoglobinuria has been carefully studied by Eason¹ and others, and its pathogenesis is now much better understood than formerly. It has been shown, for example, that the blood serum of a patient subject to paroxysmal hæmoglobinuria is hæmolytic *in vitro* for the red corpuscles of a healthy individual, and that the hæmolysis only takes place when the serum and corpuscles are subjected first to a low temperature, and then raised to body temperature. The hæmolysis, it is said, depends on the presence in the serum of amboceptor and complement, the former becoming attached to the corpuscles at the low temperature, and the latter linking itself on to the amboceptor when the temperature is raised. The attack of hæmoglobinuria is most often precipitated or determined by the patient going out into the cold air, or putting his hands or feet into cold water. The cold reduces presumably the temperature of the surface blood, and permits of the union of amboceptor and corpuscle. When the surface blood reaches the internal organs the higher temperature there will determine the action of the complement, and so the hæmolysis is produced. It is possible that in certain cases of Raynaud's disease there is a similar hæmolytic toxin in the blood, and that during the attack of local syncope or congestion it becomes activated, much in the same way as does the toxin of paroxysmal hæmoglobinuria when cold is applied. The nature of the hæmolytic process in blackwater fever has not, so far as I know, been worked out. Quinine is thought to sometimes determine the paroxysm of hæmoglobinuria, but in what way this drug produces or precipitates the hæmolysis has not yet been established.

In all these diseases, then, there is probably some toxic agent present in the blood serum which under the action of certain stimuli becomes active, and so the hæmolysis results. What the nature of the toxin may be, and from whence it is derived, is a matter for speculation. In blackwater fever one naturally associates it with the presence of the plasmodium malarie (malignant tertian parasite). Further, it has been pointed out that a considerable proportion of the patients with paroxysmal hæmoglobinuria have suffered

¹ *Journal of Pathology and Bacteriology*, 1906.

at one time or other from syphilis, and that the hæmolytic toxin is possibly para-syphilitic in nature. The activating agent may vary in the different diseases, being, for instance, cold in paroxysmal hæmoglobinuria, some vasomotor disturbance in Raynaud's disease, and possibly quinine in blackwater fever.

Finally, we must note that by immunising guinea-pigs with the serum of a case of paroxysmal hæmoglobinuria Eason obtained an anti-hæmolytic serum which neutralised *in vitro* the hæmolytic action of the hæmolytic serum. This would seem to suggest for the future a possible line of treatment for cases of paroxysmal hæmoglobinuria.

Splenomegalic polycythæmia.—Polycythæmia means an increase in the number of the red corpuscles in the blood, and there is almost always an increase in the total volume of the blood as well. In the majority of the cases there is enlargement of the spleen, and cyanosis is also a prominent feature. The condition is apparently dependent on an undue activity of the erythroblastic elements of the bone-marrow.

Parkes Weber¹ divides the cases of polycythæmia into the two following classes:—

1. Where the polycythæmia is due to a recognised cause, such as imperfect oxygenation of the blood and tissues, as in cardiac and pulmonary disease.

2. Where no such cause is to be discovered.

The polycythæmia of Group I he calls an erythrocytosis, that of Group II an erythræmia.

It is mainly to the cases of the second group that the term splenomegalic polycythæmia is applied. In these the red corpuscles may number from 7,000,000 to 12,000,000 per c.mm., and the hæmoglobin register from 170 to 180 per cent. There is nearly always an associated leucocytosis, sometimes as many as 20,000 white corpuscles per c.mm.; in any case, there is always a relative increase of the polynuclear cells (75 to 90 per cent). A proportion of myelocytes, as well as normoblasts and megaloblasts, are frequently found in the blood films. The viscosity of the blood is always increased, and the blood pressure in some cases is very high. The resistance of the red cells seldom varies much from normal.

The liver as well as the spleen may be considerably enlarged. The enlargement of the spleen seems to be due in part to vascular engorgement and in part to hyperplasia

¹ *Quarterly Journal of Medicine*, October, 1908.

of the splenic pulp. The hypertrophy of the spleen doubtless means increased hæmolysis, but on microscopic examination there is little evidence of this in any individual portion of the spleen. In some cases there has been found obstruction in the splenic vein, and in other cases the spleen is not enlarged at all.

The liver is engorged with blood, but otherwise shows little change; all the abdominal vessels are likewise engorged. In the bone-marrow there is great increase of the leucoblastic as well as the erythroblastic elements, and the fat in the shafts of the bones is invaded and replaced by red marrow.

The symptoms associated with polycythæmia can be quite satisfactorily explained by the increased amount of blood in the circulation, and this in turn is doubtless due to the hyperactivity of the bone-marrow. But what determines this increased hæmopoiesis still remains in obscurity.

Enterogenous cyanosis. — A cyanosis (enterogenous cyanosis) may also result from the partial conversion of the oxyhæmoglobin of the blood into methæmoglobin or sulph-hæmoglobin. These hæmoglobin compounds in the blood give the skin and mucous membrane the purple-blue appearance of cyanosis.

In this form of cyanosis there need be no change in the number of red or white corpuscles in the circulation; but in some of the cases the spleen has been found enlarged and clubbing of the fingers and toes noted. The cyanosis is usually chronic and may last for many years, although in varying degrees of intensity. In most of the cases it has been associated with some intestinal disturbance; in some there has been constipation and in some diarrhœa.

The methæmoglobinæmia seems to be due to the presence of nitrites in the blood acting on the oxyhæmoglobin and converting it into methæmoglobin, and the sulph-hæmoglobinæmia to the presence of hydrogen sulphide producing in a similar manner sulph-hæmoglobin. It is not certainly determined whether the nitrites and the hydrogen sulphide are derived from the alimentary tract or originate in the blood. Gibson and Carstairs Douglas¹ cultivated an organism like the bacillus coli from the blood in their case, and they associate this bacterium with the production of the nitrites.

¹ *Lancet*, 14th July, 1906; see also *Quarterly Journal of Medicine*, October, 1907.

Leukæmia.—The essential feature of leukæmia is the malignant hyperplasia that affects the leucocyte-forming tissue and which results in an enormous increase in the production of white blood corpuscles. The hyperplasia may affect only one type of cell, and when that is so there may be an absolute diminution of the other leucocytes, or the increase may affect several varieties, although one variety may be considerably more increased than the others. In lymphatic leukæmia it is the lymphocytes only that show this great increase, and it is dependent on a hyperplasia of the lymphoid tissue throughout the body, but especially in the lymphatic glands and bone-marrow. In myeloid leukæmia there is an absolute increase of several varieties of white cells, but chiefly the granular cells: there is, however, nearly always an absolute increase of the lymphocytes as well. In certain of the more acute myeloid leukæmias the granular cells may, to a large extent, be replaced by a more primitive cell, the non-granular myelocyte (pre-myelocyte or myeloblast). This cell closely resembles, and according to certain writers is indistinguishable from, the large lymphocyte: and it is probable that a number of cases that have been grouped as lymphatic leukæmias, owing to the predominance of this non-granular cell, are really cases of acute myelogenous leukæmia. The difference in the staining reactions, however, between the large lymphocyte and the myeloblast have already been referred to.

The bone-marrow in myeloid leukæmia shows great hyperplasia of the myeloid elements: and just as in lymphatic leukæmia, where the normal marrow is replaced by lymphocytes, so in myeloid leukæmia the spleen and lymphatic system generally may be converted into a myeloid tissue with precisely the same microscopic appearances as the myeloid tissue of the bone-marrow.

In some cases of lymphatic leukæmia there is no enlargement of lymphatic glands, and the lymphatic hyperplasia seems to begin in the bone marrow, in other cases there is little or no involvement of the marrow, the hyperplasia being confined chiefly to the lymphatic glands. In the same way in myelogenous leukæmia there need be but little change in the spleen or lymphatic glands, the myeloid overgrowth being entirely in the marrow.

It would seem, therefore, as if this hyperplasia might begin in any part of the blood-forming tissue, whether it be spleen, lymphatic gland, or bone-marrow, and it may

possibly begin simultaneously in several parts of this tissue. Ultimately the whole blood-forming system tends to become involved, although the hyperplasia may predominate in one part more than another. It is to be noted, however, that certain writers maintain that the primary lesion in leukæmia, whether myelogenous or lymphatic, is always in the bone-marrow.

The method of spreading of the morbid process throughout the tissues cannot be certainly determined. It may be by metastasis as in tumour growth, or it may be that various parts of the blood-forming organs respond simultaneously, or in turn, to the stimulus which produces the primary hyperplasia. And it is to be remembered that the liver, as well as certain other organs, is the seat of active blood formation in the embryo, so that the myeloid transformation that is found in these organs in leukæmia might be regarded as a return of a latent blood-forming tissue to its embryonic activity. In support of this suggestion is the observation that in certain cases of lymphatic leukæmia a myeloid transformation has been found in lymphatic glands, this doubtless being compensatory for the loss of myeloid tissue in the bone-marrow. The aggregations of leucocytes in the liver, kidneys, lungs, and other organs in leukæmia are probably due in part to infiltration, in part to local proliferation of the infiltrating cells, and in part to the proliferation of pre-existing cells.

Ehrlich draws a definite distinction between the form of hyperplasia in the two types of leukæmia. He regards lymphatic leukæmia as of the nature of a tumour growth, or perhaps it is more accurate to say as a functional over-activity of the lymphoid tissues. Myelogenous leukæmia, on the other hand, he holds is a form of leucocytosis where several varieties of the granular leucocytes respond to some chemiotactic or stimulating influence. The tendency of the present day, however, seems to be to give to the two forms of leukæmia a common pathogenesis rather than to regard them as separate morbid entities.

But this opens up the whole question of the essential nature of leukæmia, and one which at present cannot be determined. The etiology of the disease is unknown. No specific micro-organism has yet been isolated, and there is no satisfactory proof that the disease is infective in origin. Is it then a sarcoma, or sarcomatosis, of the blood-forming tissues, as Banti has suggested? Leukæmia is a malignant, and apparently purposeless, hyperplasia of certain tissue

cells, and in this respect it resembles sarcoma. But, then, we do not know the cause of the overgrowth in sarcoma. It is doubtless due to some stimulus, but where this stimulus comes from, and whether or not it is of a similar nature to the stimulus which is present in leukæmia, we have at present no means of determining. We speak of the overgrowth in sarcoma as being neoplastic, and of that in leukæmia as hyperplastic, but it is difficult to formulate exactly the essential difference between the two.

From the histological point of view the relationship between lymphatic leukæmia and lymphosarcoma seems fairly close. Indeed, a series of cases¹ might be collected which would show all gradations from benign lymphoma, or pseudoleukæmia, to lymphatic leukæmia and lymphosarcoma. Such cases are all grouped under the term lymphocytoma, and they have as a common feature enlargement of lymphatic glands, the enlargement being due to overgrowth of cells of the lymphocyte type. In some of the cases the glands involved are limited in number, whilst in other the glandular enlargement is widespread. In some cases (leukæmia and pseudoleukæmia) there is infiltration of the liver and other organs with lymphocytes, and in other cases no such infiltration: in others, again (lymphosarcoma), the lymphocytes infiltrate the capsule of the gland and invade the surrounding tissues. In all the cases the disease tends to be progressive, although in some the growth is so slow as to make such cases comparatively benign. All degrees of malignancy, however, are met with, and cases that have seemed benign for years may suddenly become malignant.

Warthin² regards these different types of lymphocytoma as genetically related, as being, indeed, the same disease with different degrees of severity. Some of the lymphocytomata, he would say, are leukæmic, that is, they have an excess of lymphocytes in the circulation, and some, on the other hand, are aleukæmic: but the tissues in the aleukæmic cases may show precisely the same infiltrations with leucocytes as the leukæmic cases, and cases originally aleukæmic may ultimately become leukæmic.

Regarding these cases of glandular enlargement (due to proliferation of lymphocytes) from the clinical side, we may have the following types:—

¹ Warthin; Osler and McCrae's *System of Medicine*, vol. iv, p. 827.

² *Ibid.*

1. Aleukæmic cases, with no increase of white corpuscles, and no relative increase of lymphocytes, in the blood.

2. Cases where the number of white corpuscles is within normal limits, but where there is an absolute and relative increase of lymphocytes. I reported a case of this sort at a meeting of the Medico-Chirurgical Society¹ a few weeks ago. The patient had a widespread glandular enlargement, but only 7,916 white corpuscles per c.mm.; 94 per cent of these, however, were lymphocytes.

3. Cases of typical lymphatic leukæmia with great increase of white corpuscles in the blood, 90 per cent or more of which are lymphocytes.

4. Cases of lymphosarcoma with increase in the number of white corpuscles in the blood, a large proportion of which are lymphocytes. Dr. Mackenzie Anderson permits me to quote a case of this sort that was in his wards in 1908. The patient had enlargement of the glands in the neck, axillæ, and groins, as well as a tumour occupying practically the whole of the anterior mediastinum. The white corpuscles numbered 28,000 per c.mm., 80 per cent of which were lymphocytes. The tumour, on microscopical examination, proved to be a lymphosarcoma.

Cases of chloroma (lymphatic type) may be included here, as they have many of the features of a lymphosarcoma. Chloroma, I might add, is a form of leukæmia (or sarcoma) in which there is hyperplasia of one or other of the marrow cells. The tumours which result have a green colour, and they penetrate the bone containing the marrow from which they grow. Metastases are common in liver, kidney, spleen, lymphatic glands, and the marrow of the shafts of the long bones. The blood is similar to that met with in leukæmia.

Somewhat analogous conditions to those of lymphatic glands may be met with in the hyperplasias of bone-marrow. There may be (1) cases with extensive marrow hyperplasia of the type seen in myelogenous leukæmia, and yet little increase in the number of leucocytes in the blood; (2) aleukæmic cases with tumour growth from bone (myeloma), the tumour consisting of myeloid cells; (3) cases of myeloid chloroma (tumour growth of bones of the head) where the blood and marrow have the characters met with in myelogenous leukæmia.

It is apparent, therefore, that whilst in a typical case of leukæmia the increase of white corpuscles in the blood-forming tissues determines a corresponding increase in the

¹ *Glasgow Medical Journal*, February, 1911.

blood, there are certain atypical cases where there is no such increase. In some of the latter the proportions of the various white corpuscles remain normal, in others, one type of cell may be absolutely and relatively increased, the remaining cells being correspondingly diminished. Further, in lymphosarcoma and in lymphatic chloroma the blood may have the characters of lymphatic leukæmia, and in myeloid chloroma the characters of myelogenous leukæmia.

Errors of diagnosis, however, may occur. For example, in whooping-cough there may be a considerable lymphocytosis, and this may occur with the complications as well as during the paroxysmal stage of the disease. Cabot¹ records the case of a boy, aged 12, who during an attack of broncho-pneumonia, complicating whooping-cough, had a leucocytosis of 94,000 per c.mm., 75 per cent of which were small lymphocytes. The blood count became normal on recovery from the illness.

A large percentage of myelocytes, even with a low total leucocyte count, would, in most cases, be quite correctly regarded as indicative of myelogenous leukæmia. But Simon² records a case which forms an exception. The case was one of fracture of the leg in which the blood presented the picture of myelogenous leukæmia (50,000 white corpuscles with 15·2 per cent myelocytes), and yet on the mending of the leg the blood returned to normal.

The term "mixed-cell leukæmia" has been applied to cases in which the two forms of leukæmia were thought to co-exist at the same time. Probably many of the cases described as such are cases of myelogenous leukæmia in which the non-granular myelocytes (myeloblasts) have been counted as large lymphocytes; and the cases of myelogenous leukæmia which have been said to have become transformed into lymphatic leukæmia are possibly to be explained in the same way—that is, that the proportion of non-granular myelocytes has greatly increased at the expense of the granular cells.

In almost all the cases of myelogenous leukæmia a proportion of lymphocytes (usually an absolute increase) is found in the blood films, so that in this sense all myelogenous leukæmias are mixed-cell leukæmias. Professor Muir³ sums up the matter in the following words:—"So far as we know, there is no instance in which the essential changes

¹ Osler and M'Crae's *System of Medicine*, vol. iv, p. 670.

² *American Journal of Medical Sciences*, 1906, p. 444.

³ Clifford Allbutt and Rolleston's *System of Medicine*, vol. v, p. 796.

of myeloid and lymphoid leukæmia were present concomitantly both in the blood and in the tissues."

It is customary to classify cases of leukæmia as acute or chronic according to the rate with which the disease runs its course: the distinction, however, is more or less arbitrary. Cases which die within two or three months from the first appearance of symptoms are regarded as acute, and the others as chronic. In acute cases the symptoms are more severe, there is fever, and frequently hæmorrhages from the mucous membranes and into the skin. Hæmorrhages are said to be more common in the lymphatic forms, but the most profuse bleeding that I have seen was in a case of the myelogenous variety, a case which I brought before the notice of the Medico-Chirurgical Society last winter.¹ Speaking generally, the more acute the lymphatic leukæmia the larger is the proportion of large lymphocytes, and the more acute the myelogenous leukæmia the larger the proportion of myeloblasts.

In all leukæmias there is, sooner or later, a diminution in the number of red corpuscles, but the colour index is usually low, and the general characters of the blood are those met with in any secondary anæmia. Nucleated red cells are present in both forms of leukæmia, but they are far more abundant in the myelogenous. The nucleated red cells include both normoblasts and megaloblasts, the proportion of the former, however, is usually considerably greater than that of the latter.

Occasionally in acute leukæmia, and towards the termination of a chronic leukæmia, the anæmia becomes extreme, with high hæmoglobin index, and megaloblasts more numerous than normoblasts. The white corpuscles may number not more than 10,000 per c.mm., with only 10 to 15 per cent of myelocytes. Such cases have, therefore, some of the features both of leukæmia and of pernicious anæmia, and it is difficult to know whether they are to be classed with the former or with the latter disease, or in a group by themselves to which the name *leukanæmia* has been given. In the majority of cases the *post-mortem* appearances are those of myelogenous leukæmia rather than of pernicious anæmia, and in particular the hæmosiderin reaction in the liver is not obtained. The most of the cases, therefore, grouped as leukanæmia are probably cases of leukæmia with a profound anæmia, although a smaller proportion of cases may be cases of pernicious anæmias with some

¹ *Glasgow Medical Journal*, January, 1910.

myelocytes (up to 10 per cent) present in the blood. It is to be remembered that the number and proportions of the various white corpuscles in the blood may be greatly affected by some intercurrent infection, and we frequently see such a terminal feature in cases of leukæmia.

Little real advance has been made in the *treatment* of leukæmia. Arsenic is still the drug that seems to do most good, but any benefit is most often only temporary. Roentgen ray treatment in a certain number of cases produces a symptomatic cure, but it seems never to be permanent, and it rarely lasts more than a few months to two or three years at the longest. With this treatment there is great diminution in the size of the spleen and lymphatic glands as well as in the number of white corpuscles in the blood. Indeed, the white cells may ultimately come to be normal in number. The patient's general health improves, and he feels fit for greater exertion. It is thought that the *x*-rays have a destructive action (due to a leucolytic toxin) on white corpuscles, especially the less mature cells. As a rule, more success is gained with the myelogenous than with the lymphatic leukæmias; in acute cases *x*-ray treatment seems at times to do more harm than good.

Purpura.—This is a term which is given to the spontaneous hæmorrhages of small extent which are sometimes met with in the skin or mucous membranes. It is a symptom occurring in the course of many different diseases, such, for example, as scarlet fever, small-pox, cerebro-spinal fever, Bright's disease, heart disease, leukæmia, the severe anæmias, and jaundice: it may also attend the administration of such drugs as iodine and quinine. Sometimes, however, the purpuric eruption is the essential feature of the disease, and then the term is applied to the morbid condition that produces the symptom as well as to the symptom itself. It is in the latter sense, that is, as the disease purpura, that this disorder takes its place amongst the diseases of the blood.

The etiology and pathogenesis of purpura still remain obscure, and hence the grouping of the various clinical types is not altogether satisfactory. We speak, for example, of *purpura simplex* when the eruption is limited to the skin; of *purpura hæmorrhagica* when there are, in addition, hæmorrhages from the mucous membranes; of *purpura rheumatica* when an arthritis accompanies the purpuric eruption: and of *Hænoch's purpura* when certain abdominal

symptoms are superadded, particularly vomiting and colic. But all these so-called varieties probably only represent degrees of severity, or variations in the symptomatology, of the same disease. Even the mechanism by which the hæmorrhages are produced is unknown. An explanation for this has been sought for in the vessel wall, and, again, in the blood itself. No constant change, however, is to be found in the vessels, and in a number of cases careful microscopic examination at the seat of hæmorrhage has failed to show any abnormality; in such cases the escape of blood is probably by diapedesis. In other cases, again, localised degenerations have been found in the vessels, and these are thought to give rise to thrombosis with subsequent rupture. Purpuric spots may be produced experimentally by the injection of certain toxic substances, such, for example, as some of the snake venoms, and it has been suggested that these toxins have a destructive action on the endothelial cells forming the capillary wall, and in this way give rise to the minute hæmorrhages.

Examination of the blood of patients suffering with purpura usually shows a diminution in the number of red corpuscles, but the anæmia is apparently secondary to the hæmorrhages and in proportion to the amount of blood lost. There may also be a moderate leucocytosis. But the most notable abnormality seems to be the diminution in the number of blood platelets. This may be very considerable, as low as 10 per cent of the normal, and it seems to be a fairly constant change in purpura. It is said that there is a relationship between the diminution of platelets and the hæmorrhagic tendency.¹ There is some uncertainty whether this diminution of platelets depends on deficiency of production or on their increased destruction.

In the majority of cases of purpura the coagulation time of the blood is about normal. It is doubtful if there is any very definite relationship between the number of blood plates and the coagulation time of the blood. It has been said that blood will not coagulate in the absence of the platelets and that the addition of platelets hastens coagulation. At one time it was thought that the prothrombin necessary for the coagulation of the blood was contained in the platelets, but now the view seems to be that prothrombin is present in the blood plasma; and in purpura, as we have just seen, there is a considerable diminution in the number of platelets, and yet the coagulation time

¹ Coe, *Journal of American Medical Association*, 1906, p. 1090.

is about normal. Hayem,¹ however, has pointed out that the blood-clot formed from the blood of a patient with purpura does not contract so as to extrude its serum as does the clot of normal blood, and he seems to think that this loss of contractility has some relationship to the deficiency of blood plates.

But the pathogenesis of purpura may be viewed from another standpoint. Professor Osler has drawn attention to the close association of purpura with erythema, urticaria, and angio-neurotic oedema. Sometimes a patient may suffer from both urticaria and purpura at the same time, or the one condition may follow the other. The colic in Henoch's purpura is regarded by many as an angio-neurotic oedema of a part of the intestine, and according to these writers Henoch's purpura would form an example of purpura and angio-neurotic oedema occurring in the same patient at the same time. From this point of view purpura would be regarded as vasomotor in origin, due to some toxin producing vaso-dilatation of the smallest vessels, with diapedesis of red corpuscles, instead of the serous exudation of urticaria or angio-neurotic oedema.

Hæmophilia.—Hæmophilia is a hereditary disorder, the chief feature of which is the tendency to severe hæmorrhages into the tissues and cavities of the body, as well as from the skin and mucous surfaces. Certain cases of hæmophilia may show purpuric spots, and may thus closely resemble the more chronic purpuras. In hæmophilia, however, there is usually a history of there being "bleeders" in the family; and the recurrence and persistency of the hæmorrhages is a much more definite factor in hæmophilia than in purpura.

As in purpura, so in hæmophilia, the cause of the hæmorrhages has been referred to undue fragility in the blood-vessels, and, again, to an abnormality in the blood itself. But in the vast majority of cases histological examination has failed to show any structural change in the vessels, and dry cupping does not seem to produce any greater transudation through the capillaries of the hæmophiles than of healthy individuals. Proof, therefore, of any structural alteration in the vessel walls is so far wanting, and so the explanation of the hæmorrhagic tendency must be sought for in the blood itself.

Examination of the blood shows a secondary anæmia proportionate to the amount of bleeding that has taken

¹ Pratt; Osler and McCrae's *System of Medicine*, 1908, vol. iv, p. 690.

place. The leucocytes are usually somewhat lessened in number, being sometimes as low as 3,000 to 4,000 per c.mm. This diminution affects chiefly the polynuclear cells, which are not only absolutely, but also relatively, lessened; they are frequently not more than 50 per cent of all the white cells present. The blood platelets, according to Hayem, are not diminished in number, and the retraction of the blood-clot takes place as in normal blood. Indeed, the clot of hæmophilic blood when once formed is as firm as that of the healthy individual, and it is difficult to distinguish the one from the other. The diminution in the number of platelets, and the special characters of the clot, may serve, therefore, to distinguish the blood of purpura from that of hæmophilia.

But the most important change, and perhaps the only constant one, to be found in the blood in hæmophilia is its lessened coagulability. In the majority of cases the coagulation time is much greater than normal, being frequently as much as thirty to sixty minutes, and sometimes longer than this. Addis¹ has shown that there is also some correspondence between the length of time the blood takes to coagulate and the severity of the clinical symptoms. The present tendency, therefore, is to explain hæmophilia as due to this deficiency in the coagulability of the blood. Addis² says that the prolongation of the time required for coagulation "is the sole proximate cause of hæmophilia, sufficient in itself to explain all the symptoms," and he holds that "hæmorrhage is no more easily induced in a hæmophilic than in a normal person," the distinction, he says, "is not in the occurrence but in the amount of the bleeding." He points out that thrombokinase is the one substance necessary for coagulation of the blood not contained in the blood plasma itself. Thrombokinase is present in the tissues generally, and as blood escapes from the ruptured vessels it comes in contact with this thrombokinase. Thrombin is thus formed, and subsequently a blood-clot. The amount of thrombin formed depends on the amount of thrombokinase, and the greater the amount of thrombokinase the more rapid is coagulation. Addis found that by adding thrombokinase to hæmophilic blood the coagulability was greatly increased, but even with considerable quantities of thrombokinase the thrombin seemed to take an unusually long time to form. Large quantities

¹ *Quarterly Journal of Medicine*, October, 1910.

² *Ibid.*

of thrombokinase were therefore necessary to produce in hæmophilic blood the rapid clotting of normal blood.

In hæmophilia the extravasated blood no doubt does form a clot, but for the arrest of hæmorrhage it is necessary that the clot should occupy the orifice in the wounded blood-vessel. If the blood clots only after it has left the vessel the wound in the vessel will still remain open and the bleeding still go on. The clotting in hæmophilia is apparently not sufficiently rapid to seal up the injured vessel, and so the flow of blood washes away from the vessel the products of this slower coagulation before it has had time to form a clot.

Thrombokinase, as we have seen, is contained in the white blood corpuscles, and Wright¹ suggests that the diminution in the number of polynuclear cells in the blood of hæmophilics has possibly some relationship to the lessened coagulability.

Sahli, several years ago, recognised the deficiency of thrombokinase, but he thought it was due to a functional defect in the vessel wall, and that it was the ruptured vessels that normally secreted the thrombokinase. There is, however, as far as I know, no definite proof of this functional defect in the vessels in hæmophilia.

In most hæmophilics there are from time to time exacerbations of the disease, and Wright says that such exacerbations correspond to periods during which the coagulability of the blood is still further lessened. Wright also makes certain suggestions for the treatment of hæmophilia. He advises giving thymus gland tabloids, or some other form of nucleo-albumin, to increase the number of white corpuscles and at the same time to increase the coagulability of the blood. He advises the giving of the salts of calcium and magnesium, as he says they likewise increase coagulability. Carbonic acid gas, too, may be given to reinforce the action of the above drugs. As a local styptic he uses a watery extract of the fresh thymus gland, and he finds it very efficacious.

Scurvy.—The etiology and pathogenesis of scurvy still remain but imperfectly understood. The older theory, that it was due to an acid intoxication, has in recent years raised many objections, the chief being that in a considerable number of what seem to be cases of genuine scurvy there is no reduction in the alkalinity of the blood, and little abnormality as regards its coagulability. At present there is

¹ Allbutt and Rolleston's *System of Medicine*, 1909, vol. v.

a tendency to regard the disease as infective in origin, and Babes has isolated a bacillus which he appears to claim as the specific micro-organism of scurvy. Hutchison¹ seems to favour the view that scurvy is an infective disorder, and he suggests that unsuitable food, exposure to cold and damp, fatigue, insanitary surroundings, and other conditions which formerly were thought to produce the disease, do not act as exciting causes, but rather by lessening resistance predispose to the growth of some specific virus.

The blood in scurvy has the characters of a secondary anæmia, and in the majority of cases there seems to be little if any leucocytosis. The coagulability of the blood, we have seen, is not materially altered, so that the hæmorrhages in scurvy cannot have the same explanation as in hæmophilia. Microscopic examination, too, has failed to show any definite lesion in the blood-vessels.

From this point of view, then, it would seem as if scurvy should be classed with diseases of infective origin rather than with diseases of the blood.

APPENDIX.

THE FIXING AND STAINING OF BLOOD FILMS.

IN making blood films it is essential that the glass slides or cover-slips that are used should be absolutely clean, and in particular they must be free from grease of any sort: the films spread more evenly, and adhere much more intimately, when the surface of the glass is perfectly clean.

Cover-slips and slides may be conveniently cleansed by immersing them for a short time in a 25 per cent solution of nitric acid. They are then washed in water and rubbed dry with a soft cloth. They can now be stored in a vessel containing methylic alcohol, but they must again be carefully dried before being used.

The films may be spread on cover-slips or on slides. The former method probably gives the more perfect film, but one can usually obtain sufficiently satisfactory smears on the slides, and slides are more convenient to work with, for they break less easily and provide a more extensive film-surface for examination.

¹ Osler and McCrae's *System of Medicine*, vol. i.

When cover-slips are employed they should not be thicker than 0.10 mm., and they must also be of the best quality obtainable, for if there is any unevenness of either cover the film will not spread uniformly, and the one cover will not slide from off the other without undue force, such as might spoil the film. When making a film, then, two cover-slips are used, and each should be held by means of a pair of forceps rather than in the fingers. One cover is brought in contact with the drop of blood and is at once applied to the other cover, so that the blood spreads itself uniformly between the two surfaces. The upper cover is then slid off from the lower without raising or putting pressure on either cover. The films are allowed to dry in the air and are then ready for fixing and staining. It is to be noted that the drop of blood taken up by the cover-slip should be small, so that in spreading it does not reach quite to the margin of the cover; too large a drop makes the film unduly thick. Of the two films obtained by the above method the lower is usually the better one, though both may be sufficiently satisfactory.

When slides are used, the drop of blood is placed towards one end of a slide and the smear made by means of another slide. The end of this second slide is brought in contact with the drop of blood and the blood allowed to flow across the breadth of the slide. The second slide is then slowly drawn over the whole length of the first slide, and in so doing the blood film spreads itself over the surface of this slide. The second slide should be slightly concave, the concavity being downwards; and in making the smear the blood should follow this slide rather than that the slide be drawn over the blood, for with the latter method various artefacts may be produced.

Films should be thin, so that they quickly dry and prevent the shrinking that takes place before the cells become adherent to the slide. The perfect film should have all the cells in one plane, separate from each other, and without overlapping. Blood films if kept free from moisture, dust, and light seem to remain unaltered for quite a long time, and weeks later they fix and stain almost as well as films freshly prepared.

The finger from which the specimen of blood is drawn must also be carefully washed with spirit or ether, so as to remove grease from the skin before the puncture is made. The first drop of blood that appears should be discarded as possibly containing some epithelial *débris*, and in taking

up a drop of blood care must be taken not to touch the skin of the finger with the slide or cover-glass. The less pressure the finger is subjected to in obtaining blood the better, for such pressure is apt to express certain elements of the blood more readily than others, and in this way may possibly alter the composition of the film.

The fixing of blood films.—Fixing of the various elements of the corpuscle is essential if the films are to be satisfactorily stained. The fixative seems to coagulate the albuminous structures in the cell and so renders them insoluble in the staining solution. It also makes them firm, giving them sufficient consistence to take up and retain the stain. There are many different fixing agents that might be employed, but as the staining may vary somewhat with the method of fixation it is better to work with but few, and the same, fixatives: in this way one's standard of comparison is less liable to be at fault.

The fixing agents used most in clinical work are (1) dry heat and (2) methylic alcohol. These two have this special merit that they preserve the cell in a more or less normal state and they do not affect its staining reactions.

1. Fixation by *dry heat* may be carried out on a metal plate or in a metal oven kept at a temperature of from 110° C. to 140° C. for ten minutes to half an hour. For several of the watery stains a temperature of 110° C. for ten minutes fixes the films quite sufficiently well, but for more complex staining the temperature should be higher and the time longer. Fixation at 120° C. for half an hour is the method most often recommended, but some authors prefer simply to raise the temperature to 150° C., then extinguish the flame, removing the films from the oven when it has become cool again.

Fixation by heat is the method employed when staining with Ehrlich's triacid stain.

2. *Absolute methylic alcohol (pure)* fixes films in from two to five minutes; but absolute alcohol or equal parts of absolute alcohol and ether are also good fixatives. Several stains, such, for example, as those of Leishman and Jenner, are made up with methylic alcohol and so they serve to fix and stain the films at the same time.

The staining of blood films.—The different stains used in hæmatology depend for their action almost entirely on a chemical combination which takes place between the stain

and the tissue stained. And so certain stains combine with one element in the cell and another group of stains with another element. Further, this specificity in staining has served as a means of differentiating and of designating the various parts of which the cell is composed. Thus we speak of the granules in the cell as being "oxyphile," "basophile," or "neutrophile," according as they react to acid, basic, or neutral dyes: and most of the staining reactions are comparable to what takes place when a salt is formed—that is to say, a chemical union is formed between the basic element in the cell and the acid element in the dye, and between the oxyphile cell element and the colour base. Sometimes, however, the staining is affected by the reaction of the fluid in which the stain may be dissolved.

Most of these dyes are true salts containing salt-forming groups, and the acid dyes are those salts in which it is the acid element that stains, whilst the basic dyes are those in which it is the base that is the staining agent. Eosin, for example, is the sodium salt of the coloured acid tetrabrom-fluorescein, whilst methylene blue is the chloride of the coloured base tetramethyl-diphen-thiazin.

The mixture of an acid dye with a basic dye may form a neutral dye, *i.e.*, a colour acid is joined to a colour base, and such a dye will stain neutrophile elements which are not supposed to react to acid or basic stains by themselves. Eosin and methylene blue have been so combined as to form an "eosinate" of methylene blue which is neutral in its staining reaction, and which, therefore, stains the neutrophile elements of the cell; this means apparently that the neutral dye is taken up by the tissue as a salt without being broken up into the ions of which it is composed.

Certain mixtures of acid and basic dyes will thus stain at one time the oxyphile, basophile, and neutrophile parts of the cell: Jenner's stain (which is a compound of eosin and methylene blue) is a good example of such a mixture. It is to be noted, however, that the combination of eosin and methylene blue may also form a chemical substance (methylene azure)¹ which stains nuclear structures, but not with the tint of either of the original colours: the special colouration of the nucleus in cells stained by, for

¹ Rosin states that five distinct colours may be formed by the mixing of eosin and methylene blue, *viz.*, eosinate of methylene blue, methylene violet, methylene azure, methylene orange, and black dye. Quoted by G. Mann, *Physiological Histology*, 1902, p. 442.

example, Giemsa's method depends on the presence of this methylene azure.

There are a large number of acid and basic dyes that have been employed at one time or another in hæmatological work, but of the former eosin, acid fuchsin, and orange G., and of the latter methylene blue, methylene green, and gentian violet, are those most in use.

Formerly when a film was double-stained the two stains were used in succession, first the one, and after the film had been washed and dried then the other as a counter-stain. With this method, however, it was difficult to obtain constant or satisfactory results, and it has now been almost entirely discarded for a simultaneous staining with two or more dyes combined together in one solution. There are now many such stains in use, so many, indeed, that it is difficult for one individual person to be familiar with any considerable proportion of them. But in any case it seems better for the clinician to employ only a few well selected stains with the technique and staining reaction of which he has had experience, for in this way he will more readily recognise any abnormality that may appear. I propose, therefore, to describe only four methods of staining blood films, as these, taken in conjunction with each other, would seem adequate for demonstrating any of the morbid changes that may be met with in ordinary hæmatological work.

Jenner's stain.—A 1 per cent watery solution of methylene blue is added to an equal amount of a 1·25 per cent watery solution of eosin. The precipitate which forms is dried, washed, and dried again. This precipitate is the "eosinate" of methylene blue, and is now dissolved in pure methylic alcohol, when the stain is ready for use. It is more satisfactory, however, to buy the precipitate in the form of a powder, as supplied by Grüber, or as a "soloid" (tabloid), as made by Burroughs Wellcome & Co. The powder is dissolved in the proportion of 0·5 gm. to 100 c.c. methylic alcohol.

The solution is dropped on to the dried film, and allowed to stain for from a half to five minutes, evaporation being prevented by covering the film with a watch-glass. The film is then well washed in distilled water, dried, and mounted in Canada balsam.

With this stain the red corpuscles appear bright red in colour. The nuclei of the various cells are blue. The eosinophile granules are bright red, and the neutrophile

granules a paler red. The mast cell granules are a deep violet blue. Parasites and micro-organisms stain blue. The longer the stain acts the better do the oxyphile elements show: with a shorter time the parts stained blue are more in evidence.

Jenner's stain is one of the most convenient for use in general hæmatological work. It does not, however, certainly differentiate the neutrophile granules, and the nuclei of some of the leucocytes are not so well defined as with, for example, Leishman's stain.

Leishman's stain.—This is a modification of the Romanowsky stain, and the special mixture of eosin and methylene blue that is used is to be obtained in the form of a powder, prepared by Grübler; it may also be had as a "soloid" from Burroughs Wellcome & Co. Of the powder 0.15 grms. is dissolved in 100 c.c. methylic alcohol (pure). There is, however, some difficulty in obtaining complete solution of the dye, and so it is well to use a mortar and pestle in making up the stain. The powder is placed in the mortar and 20 c.c. of the methylic alcohol added. These are worked up by the pestle, and then the rest of the alcohol is gradually added, stirring with the pestle all the while.

In staining a film 7 to 8 drops of the stain are allowed to flow over the surface of the smear: this fixes the corpuscles in from a half to one minute. From 14 to 16 drops of distilled water are then added, and the water and stain mixed together by gently moving the smear from side to side. The water seems to precipitate the dye in some way, and the now diluted stain is allowed to act for five to ten minutes. The film is then washed in water, very briefly in dilute acetic acid (1 to 1,500), again in water, and then dried with blotting paper. It is mounted in the same way as in Jenner's staining method.

With Leishman's stain the red corpuscles take a rich red colour, the eosinophile granules are pink, the neutrophile granules varying tints of purple, and the basophile granules a bluish-brown colour. The protozoal parasites stain a pale blue, with their nuclei maroon. Micro-organisms are blue, and the platelets blue with a pink centre.

Leishman's stain is excellent for demonstrating the structure of the various protozoa met with in the blood: it also stains well the nuclei of the different white corpuscles as well as the azurophile granules of the lymphocytes. It does not, however, always differentiate the neutrophile granules

in, for instance, the neutrophile marrow cells, and this is perhaps its chief defect as a general stain for hæmatological work.

Giemsa's stain.—The preparation of this stain is rather complicated, and it is therefore better to buy it in the form of a solution as supplied by Grübler.¹

The films are first fixed for two to five minutes in methylic alcohol. One to 2 drops of the stain are then added to 1 c.c. of distilled water. This mixture is now used for staining the films, and it is allowed to act for five to ten minutes. The films are washed in distilled water, dried and mounted.

The red corpuscles stain a pale red colour. The nuclei of the polynuclear cells are a violet red, and the nuclei of the mononuclear cells bright red. The protoplasm of the lymphocytes is blue, and of the large mononuclears a slate blue. The eosinophile granules are brownish red, the neutrophile granules violet red, and the mast cell granules mauve. Parasites stain blue.

This is a useful stain for general hæmatological work, for it differentiates the neutrophile granules of the polynuclear and marrow cells, and may serve to distinguish the large mononuclear cells from the large lymphocytes. It also stains azurophile granules.

Ehrlich's triacid stain.—This stain is a mixture of two acids (orange G. and acid fuchsin) and one base (methyl-green). Saturated solutions of these three dyes are made, and may be used after standing for twenty-four hours. They are combined in the following order and in the following proportions²:—

Saturated watery solution of orange G.,	. 13-14 c.c.
Saturated watery solution of acid fuchsin,	. 6-7 "
Distilled water,	. 15 "
Absolute alcohol,	. 15 "
Saturated watery solution of methyl-green,	. 12.5 "
Absolute alcohol,	. 10 "
Glycerine,	. 10 "

¹ Burroughs Wellcome & Co. make "soloids" of "eosin azure;" each "soloid" is dissolved in 5 c.c. of equal parts of glycerine and pure methylic alcohol.

² This triacid stain can also be bought made up ready for use, and it is much more convenient to get it in this form, as there is a certain amount of trouble involved in compounding the stain.

The ingredients are measured in the same measure, and as each is added the mixture should be shaken, especially after the addition of the methyl-green. The stain must not be filtered, and it is ready for use as soon as it is made up.

The films are fixed by heat and stained in the triacid mixture for five to ten minutes. They are then washed in running water, dried, and mounted. The red corpuscles take a copper colour, the nuclei of the white cells a bluish-green, the neutrophile granules a violet brown, and the eosinophile granules violet red. These tints, however, differ slightly with different specimens of the mixture. The protoplasm of the lymphocytes stains a pale pink, and parasites, micro-organisms, and basophile (mast) granules do not stain at all.

The triacid stain is rather poor as a nuclear stain, but it is specially useful for demonstrating the neutrophile granules of the polynuclear cells and neutrophile marrow cells.

The four staining methods described above are, under most circumstances, quite adequate for the ordinary requirements of clinical medicine. There are, however, four supplementary methods which I wish to refer to, for they might possibly prove of use in certain special cases.

*Altmann-Schridde's method*¹ for demonstrating the fuchsinophile granules in the lymphocytes. The smears, which must be thin, are fixed for one to two hours in formol-Müller (1 in 9). They are then washed for some minutes in tapwater, and then in distilled water. They are transferred to a 1 per cent solution of osmic acid, and left there for half an hour in the dark. Next wash in water, and then pour on the film some drops of Altmann's anilin acid fuchsin solution (20 grms. acid fuchsin added to 100 c.c. of a saturated solution of anilin in distilled water, the anilin solution being filtered after it is cold). The film with the stain on it is warmed over the flame till steam rises. It is then allowed to cool. Excess of stain is removed with blotting paper, and the film differentiated with a solution of picric acid (1 part saturated alcoholic solution of picric acid in 7 parts of 20 per cent alcohol); the film should take on a pale yellow colouration. It is

¹ Described in *Anæmia*, by Ehrlich and Lazarus, English translation, 1910, p. 91.

then rapidly washed in absolute alcohol, passed through xylol, and mounted in Canada balsam.

The fuchsinophile granules or rods appear a yellowish-crimson-red colour, the eosinophile granules are dark red, and the neutrophile granules a brownish-red: the mast cell granules do not stain.

“*Indophenol-synthesis*” test for oxydase.¹—The films are fixed in alcohol for five minutes. They are then floated face downwards for two to five minutes on a freshly prepared mixture of equal parts 1 per cent watery solutions of alpha-naphthol and of dimethyl-para-phenylendiamin. The films are next washed in running water, and examined mounted with water or glycerine. The granular leucocytes stain a dark opaque blue, owing to precipitation of indophenol by the oxygen in the cell protoplasm: the nuclei remain unstained. The eosinophile cells show the most marked reaction, but the neutrophile leucocytes react almost as well. The reaction in the large mononuclear (hyaline) cells is less marked, and in the mast cells still less so. A considerable proportion of the non-granular myeloblasts have been found to give the reaction, but the lymphocytes, red corpuscles, and blood platelets show no blue deposit whatever. When examining cells in which the reaction is slight, it is well to prolong the action of the stain for fifteen to twenty minutes, as the blue colour in such cells takes longer to appear than in cells in which the reaction is more marked.

Specimens mounted in water or glycerine fade in a short time, and the films cannot be mounted in Canada balsam, as the indophenol is soluble in alcohol and in xylol. Mounted in undiluted water-glass the films retain their appearances for many weeks.²

This method should be of considerable value in clinical work as a means of distinguishing the non-granular myeloblasts from the large lymphocytes, which is sometimes a matter of no small difficulty, as, for instance, in some of the more acute leukæmias.

Iodine reaction for glycogen in the blood.—Dried films are placed for a few minutes—that is, till they take on a deep brown colour—in a stoppered bottle containing iodine

¹ See paper by Shaw Dunn, *Journal of Pathology and Bacteriology*, 1910, vol. xv, p. 20.

² Shaw Dunn, *ibid.*, p. 22.

crystals. The film is then mounted in a saturated solution of levulose: any elements containing glycogen are recognised by their deep mahogany-brown colour.

Mylius test for alkali in blood.—Freshly prepared dry films are placed in a solution of free acid iodide of eosin in chloroform. The film becomes dark red in colour, and is then washed in pure chloroform. It is mounted while still wet in Canada balsam. The slides, cover-slips, and vessels used should be first washed in a weak acid to remove all trace of alkali.

The iodide of eosin, when brought into contact with free alkali, gives a bright red colouration, and so the cellular elements in the film which show this red colour are said to be alkaline in reaction. By means of this stain the protoplasm of the white corpuscles are shown to be alkaline, the lymphocytes containing a greater amount of alkali than the other white cells. The blood platelets are also definitely alkaline. The red corpuscles and the nuclei of the white cells show no reaction, and must, therefore, be either acid or neutral in reaction.

AN UNUSUAL COMPLICATION OF MEASLES.

By ALEX. J. COUPER, M.B.,
Assistant Physician, Belvidere Fever Hospital, Glasgow.

THE following case of measles was under my care last winter, and presented a somewhat unusual complication, a sufficient apology for its publication:—

The patient, F. D., a boy of 18 months, was admitted to Belvidere Hospital on 5th November, 1909, certified measles. The mother gave a history of a three or four days' invasion, with catarrhal symptoms of eyes and nose. The rash did not appear till the day of admission.

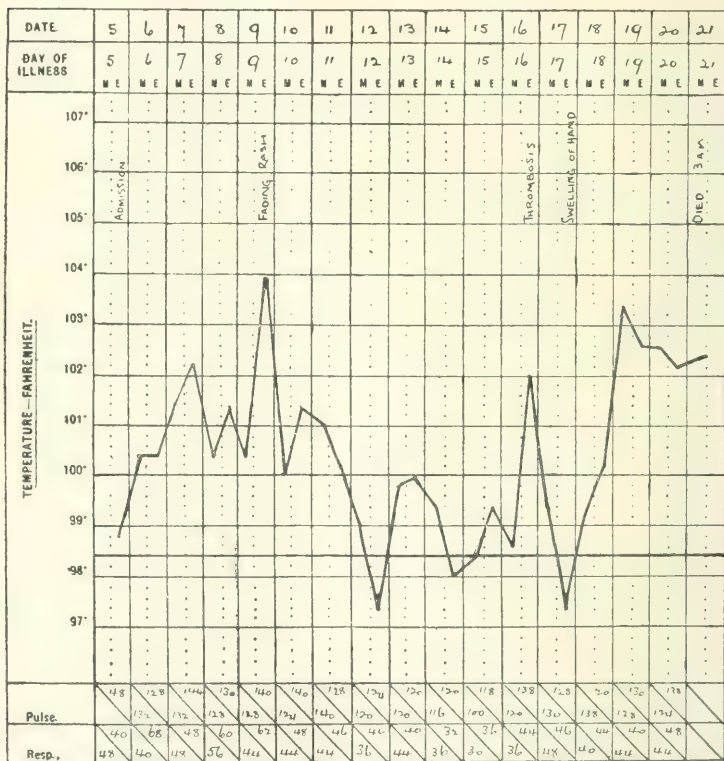
Previous health and family history were good.

On admission, temperature was 98·8° F.; respirations and pulse numbered 36 and 48 per minute respectively. A fairly well-marked and typical measles eruption was present, and involved the whole skin area. Coryza and conjunctival

suffusion were mild. Patient was a well-nourished child, but flabby.

The heart sounds were soft. Pulse was of low tension.

Mucous râles were present, and were heard over both lungs, anteriorly and posteriorly. These were most numerous and were of finer quality at the right base behind. No dulness was detected, and the respiratory murmur was nowhere impaired.



The case ran the usual course. The rash became brighter and the temperature rose on the day after admission, *i.e.*, on the fifth day of illness: the former began to fade on the ninth day of illness. With the fading of the rash, the temperature rose to 102° F., while pulse and respirations numbered 140 and 60 respectively. From this somewhat high register there was a drop of temperature, which occupied

three days, the temperature being normal on the twelfth day. During this period there was no alteration in the chest condition.

On the sixteenth day the temperature again rose to 102° F. This was accompanied by an increase in pulse-rate to 136, and in respiration-rate to 44. Next day temperature was 97.6° F. The dorsum of the right hand was found to be swollen and cedematous. Circulation in the part was good, and there was no discolouration. No pain or tenderness was present in any part of the limb. On the following day swelling was much increased, involving the palm and extending up the wrist. The terminal phalanx of each digit had become cyanosed, and the circulation in the fingers was very sluggish.

By the nineteenth day the swelling had become very pronounced. The whole of the right arm, together with the inner wall of the axilla, was affected, and these parts were distinctly cedematous and very tense. The limb was cold to the touch, and mottled (of a purplish colour), while the extremities of the digits were black. With this increase in swelling, temperature rose to 103° ; pulse, 138; respirations, 40. Crepitant râles were heard at both bases posteriorly, but no dulness was detected.

On the twentieth day the swelling was still further increased, the limb and the inner wall of the axilla had assumed a much deeper and more uniform tint, and numerous ecchymoses and bullæ, containing a sero-sanguinolent fluid, were observed.

The child died quietly on the twenty-first day of his illness.

On 23rd November—two days after the child's death—a *post-mortem* examination was made by Dr. John MacMillan, assistant physician, Belvidere, and myself. The following points of interest were noted:—

The right arm in its whole extent was swollen to about twice the size of the left. The limb was of a purple colour, which was most marked towards its distal extremity. Patches of ecchymoses and bullæ, containing bloody serum, were present at various points, particularly on the fore-arm and hand. The inner wall of the right axilla was livid and swollen. On incision the subcutaneous tissue of these parts was found to be very cedematous.

The right axillary and subclavian veins were somewhat engorged. The basilic veins were normally distended. In

the subclavian vein, about half an inch from its proximal extremity, was a firm clot, which extended for an inch backwards, and was adherent to the wall of the vein.

In the right axilla numerous glands were found enlarged. None were caseous, nor were any found to be impinging on the vein.

The heart and pericardium were normal.

Marked congestion was present in the lower lobe of the right lung, and a similar condition, to a much milder degree, was found on the left side.

Permission to examine the head was refused.

Attempts to grow cultures from the clot failed.

This case ran a normal course till the sixteenth day, but the events on and subsequent to that date, and the *post-mortem* finding, make it worthy of note.

On the sixteenth day, when the rise of temperature occurred, a careful examination of the patient was made. No sign of any lesion, except the hypostatic condition of the lungs, manifested itself. The bowels were normal. Hypostatic pneumonia *per se* does not, as a rule, cause a rise of temperature, and accordingly some other cause had to be found for the patient's condition. The swelling of the hand which followed, taken in conjunction with the pulmonary congestion, the initial slow pulse, and the flabby heart sounds, were so suspicious that a tentative diagnosis of thrombosis was made. The steady progress of the condition, and the involvement of the inner axillary wall, indicated that the lesion was situated outwith the limb, and the fact that the subclavian vein is one of the valved veins of the body made it fairly certain that the clot, if any, would be found there. These conclusions were amply justified later.

A careful search through the literature on the subject has revealed no similar case. Capillary thrombosis is well known to occur in all infective conditions. Several observers have noted that thrombosis has been found in measles, but only in the renal and cerebral sinuses.

I have to express my gratitude to Dr. Johnston, physician-superintendent, Belvidere, for his courtesy in allowing me to publish these notes.

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Obituary.

WILLIAM PATRICK, M.D.

WE regret that we have to announce the death of Dr. William Patrick, which took place at his residence, 143 Greenhead Street, Bridgeton, on 2nd February, in his seventy-fifth year.

Dr. Patrick had been in failing health for some months past, though able to do his usual routine work. His last public appearance was at the dinner to Sir David M'Vail, his much valued friend and medical adviser. A few days afterwards he began to suffer anginous attacks, and these continued with increasing severity till the end, which occurred with some suddenness. It was his wish, expressed in the first days of his illness, that his body should be cremated. Large congregations were present at the memorial services in Bridgeton United Free Church and at the Crematorium chapel.

Dr. Patrick became a Licentiate of the Faculty in Glasgow in 1862, and M.D. of the University in 1870; he was therefore in practice for forty-nine years. He was born in the East End of Glasgow, and the whole of his working life was spent in that district. He had seen Bridgeton grow from a suburban village—where many of the inhabitants grew fruit trees in their gardens, and where the population preserved an identity separate from Glasgow—into the enormous busy industrial division of the city that it now is.

As a student in Anderson's College and in the University—he was one of the last group of men to graduate in the old College—he was a pupil of Lister, Gairdner, and Macleod, and he numbered amongst his friends the late Drs. Finlayson and J. B. Russell. He became soon immersed in the busy life of a general practitioner, and built up a large practice.

In 1883 he was offered the appointment of Certifying Factory Surgeon for the South-Eastern District. The work of this post he found congenial, and his methodical habits made it a pleasant routine employment, particularly suitable as he grew older and less fitted for the more arduous labour of practice. His relations with the inspectors of factories and with the large employers of the East End were always most friendly.

Dr. Patrick made no contributions to medical literature; he was too busy, and felt the want of scientific training. But he was a diligent reader of current medical literature and was kept thoroughly abreast of modern progress by intercourse with younger men, particularly his sons and their friends. He was an example rather of the great personal influence possessed by the family doctor, whose relations with his patients very frequently crossed the border line into friendship. He had a strong hold on the regard of many hundreds of people, and he retained their affection in spite of very pronounced views on religious, political, and temperance affairs.

Probably next to his profession his church work had the important place in his heart. He was session clerk in Bridgeton United Free Church for forty-one years, and took an active part in all phases of church work. He held stringent views on the virtue and duty of systematic giving to church and charitable objects, and although it is a matter to be treated with delicacy, and was to him a purely personal concern, no offence can now be caused by stating that almost all his life Dr. Patrick obeyed the Hebraic injunction to set aside a tenth of his actual income for these purposes.

Dr. Patrick was an enthusiastic member of the Eastern Medical Society—indeed, he was one of its founders, and succeeded the late Dr. Mather as its second president. The British Medical Association and its benevolent schemes were always ardently supported by him.

He leaves a widow, five daughters, and two sons, the two last being members of the medical profession.

T. J. FORDYCE MESSER, M.D. EDIN., F.R.F.P.S.G. (RETIRED),
HELENSBURGH.

DR. THOMAS JOHN FORDYCE MESSER died at his residence in Helensburgh, on 28th January, after a long illness. Deceased,

who had some years ago retired from active practice, was born close on seventy years ago in the vicinity of Edinburgh. He studied medicine in the University of Edinburgh, where he graduated M.D. in 1864, and afterwards commenced practice in Penicuik. A little over forty years ago he removed to Helensburgh, where he succeeded to Dr. Skene's practice, and where he remained till his death. While in Helensburgh he became a Fellow of the Faculty of Physicians and Surgeons of Glasgow in 1876. Taking a prominent position in Helensburgh affairs, he became Medical Officer of Health for that burgh, a post which he occupied for nearly a quarter of a century. Failing health caused him to give up active practice about eight years ago, since when he has continued to reside in Helensburgh.

As a young man, Dr. Messer took a keen interest in Volunteering. He served in the ranks of the Midlothian Yeomanry, and before leaving Penicuik had attained the rank of Company Sergeant-Major. On settling in Helensburgh he took a commission as a combatant officer in the local artillery company, and on his retiral from the active list he held the rank of Major.

Deceased was twice married, and is survived by his widow and a grown-up family.

DUNCAN SINCLAIR KENNEDY, M.D. GLASG., D.P.H.,
PERTH.

A WELL-KNOWN Perth practitioner has passed away in the person of Dr. D. S. Kennedy, who died there on 16th February, after a short illness. A native of Oban, where he was born sixty years ago, deceased studied medicine in the University of Glasgow, where he graduated M.B., C.M., in 1873. After filling the post of surgeon to the Belford Hospital, Fort William, Dr. Kennedy, thirty years ago, commenced practice in Perth, where he became physician to the County and City Infirmary. In 1899 he took the D.P.H. St. Andrews, and in the following year graduated M.D. Glasg. He held, in addition to the infirmary physicianship, various public appointments, being Medical Officer of the Perth Poorhouse, Medical Officer of Health of the burgh of Auchterarder, and Public Vaccinator for Aberdalgie Parish. He was also medical examiner of recruits for the 42nd Regimental District.

He is survived by a widow and a grown-up family, of whom a son graduated in medicine in Glasgow.

JAMES PARKER, M.D. GLASG.,
PLAISTOW.

MANY former members of the late Sir George Macleod's clinical class will remember his assistant, Dr. James Parker, whose death occurred in a nursing home on the 14th ult.

Dr. Parker, who was the eldest son of the late Dr. William Parker, of Ning-po, China, graduated M.B.Glasg. in 1877, and the same year took the diploma of L.R.C.S.Ed. Settling in the western district of the city, he obtained an appointment as Extra Dispensary Surgeon at the Western Infirmary and Surgeon to Anderson's College Dispensary. He also became clinical assistant to the late Sir George Macleod. Leaving Glasgow shortly after Sir George Macleod's death in 1892, Dr. Parker proceeded to the eastern district of London, where he has since been in practice.

CURRENT TOPICS.

GLASGOW AND WEST OF SCOTLAND MEDICAL ASSOCIATION ("GLASGOW MEDICAL JOURNAL"): ANNUAL MEETING.—The annual meeting of the Association was held in the Faculty Hall on 30th January. Dr. Oswald occupied the chair. The Treasurer's and Editors' reports were submitted by Dr. Inglis Pollock and Dr. Monro respectively, and were adopted.

The following office-bearers were elected for 1911:—

<i>President,</i>	. . . . .	MR. JAMES GRANT ANDREW.
<i>Vice-Presidents,</i>	. . . . .	{ MR. ARCHIBALD YOUNG.
		{ DR. LEONARD FINDLAY.
<i>Editors,</i>	. . . . .	{ DR. THOMAS KIRKPATRICK MONRO.
		{ MR. GEORGE HENRY EDINGTON.
<i>Secretary,</i>	. . . . .	{ DR. JOHN ANDERSON,
		{ Lincluden, Cathcart.
<i>Treasurer,</i>	. . . . .	{ DR. W. B. INGLIS POLLOCK,
		{ 276 Bath Street.
<i>Auditors,</i>	. . . . .	{ DR. ALEX. MACLENNAN.
		{ DR. DAVID SHANNON.

General Business Committee.

DR. E. H. L. OLIPHANT.	DR. JOHN SHAW DUNN.
DR. JAMES W. ALLAN.	DR. ROBERT G. WHITELAW.
DR. GEO. A. ALLAN.	DR. JAMES SCOTT.
DR. G. BURNSIDE BUCHANAN.	DR. WM. SNODGRASS.

APPOINTMENTS.—The following appointments have been made to the recently opened Gynæcological Department of the Maternity and Women's Hospital:—

Visiting Gynæcologists.—Drs. Robert Jardine and Sam. J. M. Cameron.

Assistant Gynæcologists.—James H. Martin, M.B., Ch.B. Glasg. (1907), and Donald Duff, L.R.F.P.S.G. (1901), F.R.F.P.S.G., F.R.C.S.Ed.

Supernumerary Assistant Gynæcologists.—Robert Adam, M.B., Ch.B. Glasg. (1903), and James Taylor, L.R.F.P.S.G. (1905), F.R.C.S.Ed.

Appointment under the Factory and Workshop Act.—John Banks, M.B., C.M. Glasg., D.P.H., of Dunoon, has been appointed Certifying Surgeon for the district of Dunoon, *vice* C. W. Bell, deceased.

THE ROYAL INFIRMARY: THE RECONSTRUCTION SCHEMES.—The annual meeting of the qualified contributors of the Royal Infirmary of Glasgow was held in the Merchants' Hall on 30th January. Lord Provost A. McInnes Shaw presided. The proceedings were largely formal, and consisted of the adoption of the managers' report, which was published in the *Glasgow Herald* of Saturday, 28th January, and the re-election of managers. Among the subjects touched upon by the speakers were the record amount of work done by the institution during the year, the new arrangements for medical teaching, the appointment of a joint consultative committee for the three infirmaries of the city, and the proposed reconstruction of the Ophthalmic Institution and dispensary.

The Lord Provost, in moving the adoption of the report, said he had to congratulate the managers upon the record of progress which it disclosed. The Royal Infirmary took the premier place among their numerous charities, and it was gratifying to know that more work had been done for the community in the infirmary during the past twelve months than in any previous year of its long history, and that notwithstanding the extensive reconstruction works now in progress. That work had now been progressing for several years, but the managers would ere long have the pleasure of seeing it completed, as the reconstruction of the front Jubilee Memorial block would shortly be commenced, and that was the last stage of a long and arduous undertaking. While the managers had been paying great attention to the

building itself they had not forgotten the more important interests of the infirmary, so far as its constitution and management were concerned. Definite arrangements had now been made by means of which the old and close friendly collaboration of the University and the infirmary, which existed for so many years to their mutual advantage in days gone by, would be resumed. The Royal Infirmary offered a unique field for the study and practice of the science of medicine and surgery, and it was a very important matter that it should be allied with their great seat of learning. Some time ago¹ he took occasion to urge the desirability of some concentrated scheme of administration being introduced in connection with the work of their three great infirmaries, and he was happy to know that his words on that occasion had borne fruit by the establishment during the past year of a joint consultative committee, consisting of representatives from each of the Royal, Western, and Victoria Infirmaries. That arrangement could not but operate to the highest advantage of all the institutions concerned, as there were numerous matters of mutual interest regarding which it would be to the public advantage that joint and uniform action should be taken. From the report they would notice that there had been a considerable increase in the number of admissions, and a substantial decrease in the number of deaths, but when one looked at the accounts the outlook was not so satisfactory, as they showed a large increase in expenditure over income. That was chiefly due to the increased amount of work done, both in the wards and dispensary, and to the increased cost of materials and provisions. He would therefore appeal to the generosity of the citizens of Glasgow during the ensuing year to provide sufficient funds to meet the increased demands upon the infirmary. The managers looked forward in the future, when the new infirmary was completed, to an enlarged and increased sphere of usefulness, and they had no doubt that the public would rally to their help and provide the wherewithal to carry on its beneficent work in the most efficient manner. He appealed very strongly not only to the citizens of Glasgow but also to the people of the West of Scotland, because the infirmary was not only for Glasgow but for the surrounding districts.

Mr. J. D. Hedderwick, chairman of the House Committee, seconded. He said that one feature of the report that impressed itself very much upon the managers was the unavoidable increase in the expenditure. That was a matter

¹ See *Glasgow Medical Journal*, vol. lxxiii, p. 40.

which was very largely beyond their control. The increase had been most carefully analysed, and it was found that it might be divided under three different heads. About one-half of the increase was due to the larger and more efficient buildings which had been constructed so far. About one-fourth of it was due to the increased number of mouths they had to feed and the bodies they had to care for, and the remaining fourth was due to the increased cost of provisions and other materials which the infirmary had to use. It had been suggested to him that one matter it might be well to put before the contributors was the rebuilding of the Ophthalmic Institution, which was a branch of the infirmary's work. When the Royal Infirmary took over the administration of the Ophthalmic Institution an undertaking was given to rebuild it, when it did require to be rebuilt, in the neighbourhood of the Royal Infirmary. That necessity had arisen some time ago. The pressure upon the existing ophthalmic buildings was very severe. On many days of the week they could see waiting outside a queue of poor people who could not be received within the waiting-room, which was not sufficiently large for the numbers who were attracted to the institution by the very efficient and scientific treatment given there. Another building requiring reconstruction was the dispensary. The dispensary of the infirmary was the most recent of the old buildings, but although it was the most recent he was bound to say that it was by no means the best for the purpose for which it was built. It was lamentably deficient. One regretted to see the conditions under which the physicians of the dispensary carried on their work. They did remarkably well, but they had not a building suitable for their work, and a new dispensary was therefore an absolute necessity. Some time ago the managers acquired half an acre of ground in the immediate neighbourhood of the infirmary, upon which they proposed to erect a dispensary. They also proposed to erect along two sides of this building, and one stair up, a new Ophthalmic Institution. The only quarter from which they could get the money necessary for this new Ophthalmic Institution was from the citizens of Glasgow, and conscious as they were of the righteousness and urgency of the demand the managers would harden their hearts to make an appeal to the citizens, in the confident belief that they would not harden their hearts. It was not desirable to boast about a work not yet begun, but he could assure the contributors and the public of Glasgow that the utmost pains were being taken to ensure the building of an Ophthalmic

Institution which, without undue cost and without any fanciful or extravagant adjuncts, would be the best adapted for its purpose of any eye infirmary in the world. He was making rather a big boast in saying so, but he could assure them that the greatest care was being taken to have everything right. They were fortunately able to avail themselves of conspicuous talent and capacity in the persons of their surgeon, Dr. Maitland Ramsay; their superintendent, Dr. Thom; and their architect, Mr. James Miller. These gentlemen had put together plans which had commended themselves to all who had seen them, and therefore in making an appeal by and by to the citizens of Glasgow, they would be able to put forward a scheme to which no objection could be taken by anyone either on the ground of undue expense or want of efficient scientific planning and equipment.

The report was adopted.

Principal Sir Donald MacAlister moved:—"That the thanks of this meeting be given to the employees in works, warehouses, and other establishments, and to the captains and crews of steamers and harbour officials, for their continued subscriptions." The Royal Infirmary, he said, had been supported royally by many merchant princes and other persons of wealth in this city, but he could not help feeling that the contributions of those who were referred to in the resolution had almost more significance than the gifts of the great, because they came from those who, either in their own persons or in those of their friends, had learned by actual experience the value of the work done by the infirmary doctors, and when a contribution came with gratitude behind it he thought it had double value. He was sure they would accord their thanks to those, many in number and all hearty in liberality, who were named in the resolution. The Lord Provost had referred to the restoration of the ancient connection between the medical school of Glasgow and the Royal Infirmary. He was happy to state that the final step was taken at the last meeting of the University Court, and now nothing remained to be done but to sign an agreement on which all parties were agreed, and to get through the Privy Council and Parliament an ordinance which on the side of the University made all the necessary educational arrangements which the scheme implied. When those steps, which were only formal, were finally taken they would at once proceed to make the appointments they were empowered to make, and he hoped before next annual meeting they would be able to report not only that the scheme was in full

operation, but in satisfactory operation. He could not help thanking Sir William Bilsland, Mr. Russell, Mr. Hedderwick, and others, who had co-operated with him in carrying through a complicated operation. He believed that the combined wisdom of Glasgow could not have produced anything better. He was sure the result would be an extension of the medical activity not only of the Royal Infirmary but of Glasgow as a whole, which would be to the good of medical science. Like the Lord Provost, he had never been able to see why the three infirmaries of the city, which had so much in common, should not have an opportunity of meeting and discussing matters of mutual interest. The points in which they were interested in common were vastly more than those in which they were competitive, and he felt sure it was a first step to a broader co-operation and more intimate relationship between each other than had existed in the past. That also would be to the educational advantage of the medical school of Glasgow, and on that ground alone he heartily supported it.

The motion, having been seconded by Mr. Timothy Warren, was adopted.

THE WESTERN INFIRMARY RESIDENTS' CLUB: ANNUAL DINNER.—The Club held their annual dinner in the Grosvenor Restaurant on Thursday evening, 9th February. Lieutenant-Colonel W. F. Somerville, M.D., officer commanding R.A.M.C. (T.F.), Glasgow Units, was in the chair. Drs. Barclay Ness and Robert Kennedy were entertained as guests of the Club, in recognition of their recent promotion to be physician and surgeon respectively to the infirmary. About seventy of the old residents were present, including Drs. Sewell (Helensburgh), Macpherson (Cambuslang), Clark (Dumfries), and Stewart (Leeds).

At the business meeting the proposed alterations in the constitution of the Club were discussed and agreed to. The Treasurer reported the financial position of the Club to be in a very satisfactory condition.

After dinner and the toast of "The King," Dr. Jack, in an eloquent speech, proposed "The Old Institution," and Dr. George MacLeod replied. The Chairman gave the toast of "The Club," and Dr. J. H. Nicoll that of "Absent Friends."

The Secretary, Dr. James Galbraith Connal, would like members to intimate to him any change of address.

NEW HOSPITAL FOR SICK CHILDREN.—The twenty-eighth annual meeting of the subscribers to the Glasgow Royal

Hospital for Sick Children was held in the Merchants' Hall on 30th January, Mr. Francis Henderson, the Dean of Guild, presiding.

The Chairman, in moving the adoption of the annual report, which has been published, said that 1,000 patients were treated in the hospital during the year. As they were aware, there were only about 70 cots in the institution, so that in each of the cots 14 patients had been under treatment in the course of the year. At the country branch at Drum-chapel, where the children were removed when convalescent, 112 patients were treated; while at the third great branch of the work of the hospital—the dispensary—14,250 children had been benefited. Taking the patients treated in the hospital, those treated at the country branch, the cases at the dispensary, and the subsequent attendances given by the nurses in the homes of the patients, there was a total number of acts of service rendered to the sick and suffering children of Glasgow of 50,000. Anyone who read the annual report must be struck with two things. These were the marvellous economy and the efficiency with which the work of the hospital was conducted in every department. He knew of few institutions in Glasgow doing good work which were able to keep their income within their expenditure. Dealing with the subject of the new hospital at Yorkhill, Mr. Henderson said that the directors were unanimous as to the kind of hospital they intended to build, and also as to the site. The idea was to have an hospital divided in such a way as to secure the maximum of light and sunshine for every cot. There would be accommodation for 200 cots. That was to say, they would be able to treat 3,000 children in the institution instead of 1,000 at present. Some people said, "What about the cost?" The cost was the least of the difficulties they had to encounter. What they wanted was to secure an hospital adequately equipped for the work it had to do. They turned away hundreds every year from their present hospital on account of the lack of accommodation, and the need was clamant for a larger hospital. In conclusion, Mr. Henderson made a strong appeal to the public for funds towards the building of the new hospital, and also stated that a large addition would be required to their annual income.

Mr. C. K. Aitken seconded, and the report was adopted.

Principal Sir Donald MacAlister moved—"That this meeting, being deeply impressed with the fact that the existing hospital is utterly inadequate to meet the ever-increasing

demands for accommodation, cordially approves of the steps taken by the directors towards the erection of a new children's hospital in Glasgow, and heartily commends the movement to the generosity of the people of Glasgow and the West of Scotland." The need was urgent for more accommodation and for better accommodation. Magnificent results were attained in the present hospital by the devotion and skill of the staff and the nurses, and by the care with which the directors managed the affairs of the hospital, but those results were attained under conditions which, on account of want of space, and because much of the equipment was obsolete, hampered and cramped the efforts made, and which also diminished success in the matter of treatment, because the position of the hospital had ceased to be hygienic. Because of the want of accommodation hundreds of children had to be refused admission.

The motion was adopted.

GLASGOW EYE INFIRMARY.—The annual meeting of qualified contributors to the Glasgow Eye Infirmary was held in the Merchants' Hall on 30th January. There was a large attendance, and Sir James King, president, occupied the chair.

Mr. Harold J. Black submitted the directors' annual report, and Mr. R. G. Paterson read the financial statement.

The Chairman, in moving the adoption of the reports, said that the past year had been one of unexampled activity. If it were necessary to prove that the institution met a great public want, 30,000 voices of all ages who had been treated either as outdoor or indoor patients during the past year would gladly attest its usefulness. Its operations extended over a wide area. Though the bulk of those treated belonged to Glasgow and the West of Scotland, it opened its doors to patients from all parts of the country. In the past year patients had come from the northern counties of Aberdeen on the east, Sutherland on the west, and on the south from Dumfries and Wigtown. The patients had been treated with the highest skill and the most gratifying success. It could not but be a matter of satisfaction to the directors, as well as to the subscribers to the hospital, to realise that the method of testing eyes bacteriologically before operation was probably first introduced into ophthalmic practice in the Glasgow Eye Infirmary. That was a method which had immensely benefited operations for cataract, and had made a suppuration after such operations all but unknown. Not so many years ago a large percentage of eyes operated on for cataract were lost

from suppuration, but now disaster from this cause was practically unknown. It could not but be of interest to the well-wishers of the Glasgow Eye Infirmary to know that this new method was introduced by a member of their staff, and was taken up by all the members, and, indeed, had now extended to many other hospitals. Adverting to the work of the infirmary, the Chairman said that the extent of benefit, of course, varied in each individual case. Many had been saved from a future of blindness, many freed from excruciating pain, and in many cases imperfect vision had been restored, and, especially in the case of young persons, early attention to the eyes had often prevented serious after trouble. The importance of that last matter had been more seriously realised in recent years, and all the larger school boards had been providing for medical inspection of children in that connection. It was important to remember that their institution was educational as well as curative. Their hospital served an important purpose in furnishing a valuable teaching field, and in the public interest he trusted that their post-graduate classes would be more and more numerously attended. After all he had said as to the work of the infirmary, notwithstanding the splendid skill of the surgical staff, the work of the directors, and the faithful services of the officials, it was sad to find that the revenue fell considerably short of the ordinary expenditure. Last year there was a deficiency of £1,179 and this year of £956. He made an earnest appeal for increased liberality. No money was wasted, and surely the institution was worthy of support. It is much used and highly appreciated by the working classes, and he urged them, though liberal in the past, to give the Eye Infirmary a larger share of their annual contributions. Even more strongly, however, would he address the annual subscribers. Their total subscriptions last year only amounted to £1,061, while no less than £2,133 came from public works. The scale of subscription had been fixed on too low a basis. He was sure that discrepancy was not intentional, and it was surely not unreasonable to hope for an additional £500 yearly from the generous public in their great city.

Mr. John Clapperton seconded, and the reports were adopted.

THIRTY-FIFTH ANNUAL REPORT OF WOODILEE MENTAL HOSPITAL.—As we noted some little time ago, Dr. Hamilton Marr was appointed a Commissioner in Lunacy. Previous to his demitting office as Medical Superintendent at Woodilee

Hospital he drew up the report for the year ending 15th May, 1910. This has now been issued, and from it we extract the details which follow.

During the year ended 15th May, 1910, the number of patients under care and treatment was 1,376. Three hundred and twenty-one patients were admitted. Of these, 156 were men and 165 were women. Thirty men and 55 women (85 in all) were discharged as recovered. The number of patients discharged not recovered was 61—24 men and 37 women. The deaths numbered 148—75 men and 73 women. The patients resident in the institution on 15th May, 1910, numbered 1,082, or 27 more than on the corresponding date of the previous year. The number of patients admitted is 26 above the average number admitted during the previous ten years.

Detailed histories were obtained in 278 cases, *i.e.*, 86·6 per cent of the admissions. In 73, or 22·7 per cent of the cases admitted, alcoholic excess was the direct cause of insanity. This is about 1·2 less than the percentage of last year, and is certainly under the average when compared with the percentages of previous years. The proportion, however, is a large one, and its decrease does not give much ground for hopefulness in view of the well-known fact that many cases of alcoholic insanity occurring within the Glasgow Parish are treated to a conclusion without the necessity for certification.

The cause next in importance to alcoholism is that of senile decay, which was responsible in 51 cases, or in 15·8 per cent of the admissions. This is a large increase in the percentage of senile cases. It is an interesting fact that the increased numbers occur mainly at the ages from 65 to 69, at which ages there were 23 admitted this year as compared with 7 in the previous year.

Thirty-four of the patients admitted were predisposed to insanity by heredity. This is also the probable cause in the majority of the cases where no factor was assignable in spite of the history obtained and careful observation. Syphilis is reported in 31 cases as compared with 19 in the previous year. Mental instability, as revealed by congenital mental deficiency not amounting to imbecility, is accountable in 20 cases, and epilepsy in 19 cases. These numbers unfortunately show a marked increase in a degenerate class of patient, and point to low and adverse social conditions.

General paralysis of the insane was present in 23 men and 1 woman, as compared with 18 men and 5 women in the previous year. In connection with this disease, until recently

considered incurable, treatment by the administration of arsenical preparations is being carried out. The results so far are favourable, but some time must elapse before the value of such treatment can be fairly estimated.

The analysis of the discharges shows that 30 men and 55 women, 85 in all, were discharged as recovered. The large number of incurable illnesses among the men accounts to some extent for the diminished number of their recoveries as compared with those of the women. (General paralysis was present in 14·7 per cent of the men admitted and in 0·6 of the women.) The recovery-rate is 26·4 per cent of the total number of admissions, a decrease of 8·4 per cent as compared with the rate of the previous year, and is 11·2 per cent below the average. It must be kept in mind with regard to Woodilee Mental Hospital that the admissions consist of cases thought to be unsuitable for temporary treatment, such as is given in the mental wards of Duke Street Hospital, of cases drafted from the mental wards, of cases returned from boarding-out, or of cases transferred from other institutions. In this manner no patient whose insanity is likely to be of short duration is admitted.

The percentage of deaths on the average daily number resident was 13·6, as compared with 10·9 in the previous year. The total number of deaths was 148 (75 males and 73 females). In 32 cases organic brain disease or exhaustion from mania, &c., was the cause of death. In 24 cases (20 males and 4 females) general paralysis was accountable, senile decay in 18, tuberculosis in 15, diseases of the heart in 11, epilepsy in 10, enteritis in 6, and bronchitis in 5 cases.

Following Dr. Marr's report are the reports of His Majesty's Commissioners in Lunacy for Scotland. From these we learn that everything in the hospital was found to be in a very satisfactory condition.

THIRTEENTH ANNUAL REPORT OF GARTLOCH MENTAL HOSPITAL.—From the report of the Medical Superintendent (Dr. Parker) we get a very good idea of the work of the past year. At 15th May, 1909, there were 404 men and 363 women on the Hospital register, a total of 767. At 15th May, 1910, there were on the register 391 men and 368 women, a total of 759, thus showing a decrease of 8 in the resident population as compared with an average increase of 26 during the last five years.

Two hundred and thirty-five cases were admitted, while 243 were discharged or died during the year. This was made

up as follows:—38 men and 43 women (81) were discharged recovered. The lowness of this recovery-rate, 34·4 per cent, is explained by the fact that most of the transient cases of the parish are treated in Duke Street observation wards. Sixty-three men and 48 women (111) died, 31 men and 20 women (51) were discharged, relieved, or not improved. Of this last group of 51, 15 were transferred to other asylums in Scotland, 3 were sent to England or Ireland, 17 were handed over to the care of their friends, 15 were boarded out in the country with suitable guardians, and 1 was discharged on the expiry of the emergency warrant. There were 1,002 persons under care during the year, and the average number resident was 769.

The admissions this year again show a marked falling off as compared even with last year, being 235 this year as compared with 282 last year, and 300 and 301 in the two years previously. So bad, however, has the character of the admissions been from the point of view of discharge or recovery, that with a smaller admission-rate and a higher death-rate the average number resident is higher than ever before, and the year finished with only 8 fewer inmates than last year. Of these admitted with a history of the duration of the illness, 151, or 68·5 per cent, were ill over a year on admission, were congenital imbeciles, or had been ill previously. There were 13 epileptics admitted, 21 general paralytics, and 44 cases of dementia (secondary, organic, or senile), besides cases of chronic delusional insanity in whom recovery was hopeless.

The decrease in the proportion of cases admitted during the period of maturity continues fluctuating but tends downwards, while the percentage of cases admitted above the age of 50 tends to rise, and is this year higher than it has ever been before.

The wards continue to be very heavy owing to the large number of epileptic and senile cases in them, while a feature of the last few years has been the increasing number of the troublesome hysterical forms of insanity.

The death-rate is very high, 11 per cent. General paralysis heads the list of causes of death, 27, or almost 25 per cent, dying from this one cause. Next in importance comes the senile group, 19 cases of cerebral hæmorrhage or softening, and 13 cases of general senile decay. Almost one third of the deaths (35 out of 111) occurred above the age of 60. Fourteen deaths were due to tubercular diseases.

Again, as usual, alcohol alone or in combination with other

agents is the most prolific determining cause of the insanity in the admissions, but this year there is a most notable fall in the number of cases apparently due to alcohol. Only 34 cases, or 14·4 per cent of the admissions, are ascribed to alcohol as the determining cause, as compared with 23 per cent (65 cases) last year, and 24·3 per cent (73 cases) the year before.

The histories continue to show alcohol as an indirect cause of insanity very strikingly. The apparent influence of parental alcoholism on the adolescent admissions is as notable as ever. Excluding all those admissions in whose cases a definite history regarding parental abuse of alcohol was not obtainable, we find that there was excessive use of alcohol by one or both parents in 45·9 per cent of the admissions. If the admissions be split into two groups, and only those whose first mental breakdown occurred over the age of 26 be taken, then we find parental abuse of alcohol present in only 31·8 per cent, while in those whose first mental breakdown took place under the age of 26, we find a much larger percentage of parental alcoholism, namely 72·4 per cent.

There is an unusually large number of cases (20) admitted this year showing evidence of syphilis. In this connection it is of interest to note that Dr. Gilmour, the Pathologist, found positive evidence of syphilis by means of the Wassermann reaction in no fewer than 96 per cent of a series of 60 cases of general paralysis.

In January of 1910 the new Scottish Western Asylums' Research Laboratory was started with the objects, among others, of encouraging, co-ordinating, and guiding clinical and pathological research in the Associated Asylums, namely, Dykebar, Gartloch, Gartnavel, Hawkhead, Kirklands, Riccarton, Smithston, and Woodilee. In Gartloch the work has taken the line mainly of research into the etiology of general paralysis and the use of Ehrlich's more recent arsenical preparations in its treatment.

Dr. Parker's report is followed by that of His Majesty's Commissioner in Lunacy, who speaks in very high terms of the efficiency of the hospital.

MOTOR AMBULANCES IN GLASGOW.—We learn that the St. Andrew's Ambulance Association purpose, and are already carrying into effect, the substitution of horse ambulances by light motor wagons. For some years now the Association has used, in addition to the horse-drawn vehicles, a motor

wagon, and, as a result of experience of its advantages, both as regards increased speed and diminished cost of running, it has placed orders for several motor wagons of a new type. These will shortly be ready for use.

THE SERVICES: ROYAL ARMY MEDICAL CORPS.—At the January examination for commissions in the Royal Army Medical Corps there were thirty-one candidates, of whom fifteen were successful in obtaining commissions.

Mr. J. D. Kidd, M.B., Ch.B.Glasg., was bracketed for the first place, with 617 marks. Mr. Kidd, who graduated in 1906, has held resident appointments in Glasgow as house physician and house surgeon in the Royal Infirmary, and house surgeon in the Eye Infirmary.

TERRITORIAL MEDICAL SERVICE: GLASGOW R.A.M.C. OFFICERS' DINNER.—The annual mess dinner of the officers of the Glasgow Units of the Royal Army Medical Corps (Territorial Force) was held on the evening of 18th ult. in the Grosvenor. Sir George T. Beatson, K.C.B., V.D., Administrative Medical Officer of the Lowland Division, presided, and the company, which numbered about 100, included Surgeon-General W. L. Gubbins, C.B., Director-General of the Army Medical Service; Principal Sir Donald MacAlister, K.C.B.; Sir John Ure Primrose, Sir Hector Cameron, Sheriff Davidson, Sheriff McClure, Colonel Roxburgh, Colonel Laidlaw, Colonel Morrison, Colonel Rome, Colonel Shearer, C.B. (Indian Medical Service), and Lieutenant-Colonel Cochrane. Apologies for absence were received from the Secretary of State for War (Mr. Haldane, K.C., M.P.); Surgeon-General Sir Alfred Keogh, K.C.B.; General Spens, and Colonel Fell.

The Chairman, in the course of the evening, made a statement regarding the medical service of the Lowland Division. He said he did so with the approval of the Director-General, whose presence they appreciated as a high compliment. The Territorial medical service had been framed on the same lines as that of the Regular Army. As regards regimental assistance in the Lowland Division, all the units with the exception of two had been provided for, but as each had two medical officers, and only one would be called up on mobilisation, they would be quite able to fill up the deficiency. He was glad to say that the field ambulances were at full strength in officers and men. They had not yet been called upon to form sanitary companies, but they had the full complement of water-duty men, who had done duty during the past two

seasons with their respective regimental units. He was interested some time ago to know from what trades the Corps drew its recruits, and to this end he had had a return prepared, from which he found that in the Units of the Lowland Division, a body of little over 1,000 men, there were represented no fewer than 161 trades. Of these 182 were clerks, 10 were brassworkers, 11 boilermakers, 16 chemists, 15 commercial travellers, 24 compositors, 10 drapers, 12 draughtsmen, 21 electricians, 67 engineers, 12 grocers, 15 iron turners, 32 joiners, 14 motormen, 16 patternmakers, 22 plumbers, 24 printers, and so on. The work of providing voluntary aid detachments for the rapid evacuation of the sick and wounded from the field ambulances to the general hospitals had been enthusiastically taken up in Scotland by the county committees of the Red Cross Society. Within the past three or four months they had registered 65 voluntary aid detachments, representing a personnel of 2,008, and there were also under training 75 other detachments, representing a personnel of 3,500. He thought that spoke well for the patriotism of the country. It was gratifying to know also that the general hospitals were complete. They had obtained the surgical and medical staff and the nurses, and had practically settled upon the buildings, so that within the next ten days, if the consent of the Director-General was obtained, they could have in Glasgow and Edinburgh three general hospitals, giving 1,560 beds, in working order within 24 hours' notice. In this connection he acknowledged that they had been met in a very generous and helpful spirit by the Poor Law authorities. As regards the convalescent homes, these would be obtained through the Red Cross Society. Referring to last year's work, Sir George said it was in every respect satisfactory and full of promise. The camps were well arranged and most carefully supervised, an excellent standard of sanitation being maintained. This year there would be a combined camp of all the field units in connection with the concentration of the Division in Ayrshire. The water-duty men would be distributed to the respective regiments, and the general hospitals would train at Portsmouth and at Aldershot. He thought he was justified in saying that the medical service of the Lowland Division was in a satisfactory condition, and was improving in efficiency every year. That was due to several causes. They had received great help and kindness from the Royal Army Medical Corps itself, from the Director-General downwards. They had been provided with excellent adjutants, and the permanent staff had always been

of the best. Then they owed much to the patriotism of the profession. No body of men had responded more generously than the medical profession, not only in Scotland but throughout the United Kingdom. The officers of the different units in the Lowland Division had given loyal service, and they had been supported by a good class of non-commissioned officers and men. Another thing that had made for the success of the corps was that it represented a good cause. Two things rendered an army inefficient—sick and wounded men. Any corps that could prevent the first and was quick in removing the second was the best friend an army could have. In conclusion, Sir George extended a very cordial welcome to General Gubbins.

General Gubbins, in acknowledging the compliment, said that this was his first visit to Glasgow, where he arrived a stranger that morning. But he knew Glasgow by reputation, and he could not forget that she had given two great soldiers to the British Army. The first of these, Sir John Moore, himself the son of a Glasgow medical man not unknown to fame, had founded the system of discipline and training of British infantry which was still in use. The other, Lord Clyde, began his famous career as an ensign at San Sebastian, and would ever be memorable for his strenuous work in the Crimea and the Mutiny. He (General Gubbins) always looked back with pleasure to the time when, shortly after he had entered the Service, he was attached to the 79th Highlanders in Egypt. He was present at a St. Andrew's night dinner, and had listened to the massed pipers of the Highland Brigade; but the chief event of the evening to him was the graceful and fluent speech of the commanding officer, General Sir Archibald Alison—a Glasgow man. Besides the many other distinguished sons of Glasgow, in various walks of life, he would refer to the fact that from her University she had sent not a few into the Medical Service of the Army, and he would like to remind the company that two of these were at present on the professorial staff of the Army Medical College. He referred to Lieutenant-Colonel Sir William Leishman and to Major Wm. S. Harrison. The former of these had a reputation which was world-wide, and he had received the honour of F.R.S. at an unusually early age. In the junior ranks she had also a worthy representative in the person of Lieutenant H. S. Ranken, who had passed into the Service at the top of the list, and who had since done admirable work. It was quite clear to him that the training which the University gave to her medical students was a

good one. He was gratified to learn of the way in which the Medical Units of the Division were drawing recruits. When he left London they were only one officer and ten men under the establishment, but he had since learned that the vacancy for the officer had been filled, or, at anyrate, the candidate's papers had been sent on, and that there were more applicants than were necessary to fill the vacancies in the ranks. In conclusion, he wished to thank them for the hospitality which he had received that night.

SLEEPING SICKNESS: A FRESH CAMPAIGN.—The British South Africa Company has decided upon the despatch of a special commission to investigate sleeping sickness in Rhodesia. The commission will consist of Dr. Aylmer May, principal medical officer, Northern Rhodesia; Dr. A. Kinghorn, of the Liverpool School of Tropical Medicine; Dr. Leach, of the Northern Rhodesian medical service; Mr. O. Silverlock, entomologist; and Mr. Jollyman, bacteriologist.

An expedition sent out by the Liverpool School of Tropical Medicine is already on its way to the Congo, under Professor Todd, well known in connection with sleeping sickness research, and two assistants, and it is proposed that a further commission shall go from this country to conduct a separate investigation in another part of the Congo. Dr. Aylmer May states that sleeping sickness in the Luangwe Valley of North-Eastern Rhodesia, where the Chartered Company's commission is about to work, is of an entirely different type from that of the ordinary sleeping sickness, inasmuch as it is evident that it is not transmitted by the *Glossina Palpalis*. This insect does not exist within 300 miles of the valley, and the majority of those attacked have never been in the *Palpalis* area. It is suggested that this disease is carried by the *Morsitans* fly, an insect which, unlike the *Palpalis*, is not confined to well-defined and limited areas in the neighbourhood of the water, but is distributed over large areas. It does not, however, seem to follow that because the *Morsitans* is a disease-carrier at one altitude, it is necessarily equally dangerous under other climatic conditions. Five Europeans have been stricken with this form of sleeping sickness, of whom three are dead and two under treatment. Dr. Aylmer May expresses the opinion that if the conditions agreed to by the conference which has just been held at the Foreign Office are carried out, there is not much danger of the disease spreading from the Congo southwards with the extension of the railway. With proper precautions there is no cause

for alarm, as the conditions in Northern Rhodesia are entirely unsuitable to the spread of the malady.

THIRD INTERNATIONAL LARYNGO-RHINOLOGICAL CONGRESS.—The Third International Laryngo-Rhinological Congress will meet this year in Berlin, in the rooms of the Herrenhaus, from 30th August till 2nd September. The Congress will be under the presidency of Herr Geheimrat B. Fränkel. Associated with the Congress there will be a scientific exhibition, illustrating the relationship of phonetics to laryngology and the development of broncho- and œsophagoscopy. The following contributions have been promised:—

1. The relations of experimental phonetics to laryngology: Gutzmann (Berlin) and Struyken (Breda).

2. Bronchoscopy and œsophagoscopy, indications and contra-indications: Killian (Freiburg), Kahlen (Wien), and Chevalier Jackson (Pittsburg).

3. The lymphatics of the nose and nasopharynx in their relation to the rest of the body: Broeckaert (Ghent), Poli (Genoa), and Logan Turner (Edinburgh).

4. The so-called fibrous polypi of the nasopharynx, place and method of their attachment and their treatment: Jacques (Nancy) and Hellat (St. Petersburg).

Communications and inquiries should be address to the secretary of the Congress, Prof. Rosenberg, Schiffbauerdamm, 26, Berlin, N.W.

NEW PREPARATIONS, &c.

From Messrs. Burroughs Wellcome & Co., London.

Streptococcus Vaccine, Rheumatic Fever, 1 c.c. (Wellcome Brand), containing 10 million organisms.—This is the latest addition to the list of vaccines issued by this progressive firm. It is stated to be prepared from several strains of the micrococcus rheumaticus of Paine and Poynton. It is supplied in the usual convenient sealed vial, carefully packed in wooden retainer, and may be obtained also with 50 million organisms in 1 c.c.

The Wellcome Photographic Exposure Record and Diary, 1911.—As in former editions this little pocketbook contains all that it is essential an ordinary photographer should know who uses the convenient "tabloid" preparations for his hobby. An Exposure Calculator is fixed in the cover, and clear and careful explanations are given of all the processes of exposure, development, printing, and finishing the print by various methods. Several of the newer

special processes, such as colour photography, ozobrome and Bromoil, can be carried out conveniently and easily by the use of "tabloid" preparations. There are spaces for recording many exposures, a diary, and a division for memoranda. The book should be in the hands of all who wish to work with the minimum of trouble and mess.

From Messrs. Knoll & Co.

Diuretin.—A brochure, in which the composition, actions, and uses of the theobromine-sodium sodium-salicylate salt called diuretin are discussed. As is well known, this salt is for use where a powerful and sustained diuretic action is desired. A bibliographic index gives a list of 177 references to this substance in medical literature all over the world.

From Messrs. Thos. Christy & Co.

Py-Shan Points Tea.—This is a tea which is stated to consist only of the points of the shoots and of the edges of the leaves, free from midribs and stalks, and it is claimed to be richer in caffeine and to contain less tannin than ordinary teas, and, consequently, to be more economical in use. On trial, it appears that the tea should certainly be economical in use, and for those not wedded to the use of China tea is well worthy of trial. The tea is in a state of fine division.

From Messrs. Horlick's Malted Milk Co.

Horlick's Motor Maps of Scotland, England, and Ireland.—These are well printed maps on a scale of 15 miles to the inch for Scotland and Ireland and 12 miles to the inch for England. The main roads are coloured red, secondary roads are blue, and other roads are uncoloured. The distances between important points are clearly shown alongside the roads. Each map is in a case which fits easily in the pocket. We understand that members of the medical profession may have copies of the maps on request. They are well worth having. Scotland seems to have comparatively few roads marked red when compared with England.

Note.—Through an overlook in the proof-reading, a statement was allowed to appear on page 133 of the February issue, that the *U.S.P.* tincture of aconite is much weaker than the corresponding *B.P.* preparation. The fact is that the *U.S.P.* tincture is practically twice as strong as the *B.P.* preparation.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1910-1911.

MEETING III.—4TH NOVEMBER, 1910.

The President, PROFESSOR ROBERT MUIR, in the Chair.

THE RÔLE OF PHAGOCYTES IN IMMUNITY AGAINST INFECTIVE DISEASES; MECHANISM OF PHAGOCYTOSIS (ILLUSTRATED BY CINEMATOGRAPH).

BY DR. C. LEVALITI, Pasteur Institute, Paris.

Synopsis of Lecture—1. Definition of the rôle of phagocytes in immunity (according to Metchnikoff)—History of phagocytosis—Researches of Karl Roser and Metchnikoff—Intracellular digestion—Rôle of mesodermic cells in the absorption of foreign particles—Application to infection and immunity.

2. Definition of phagocytosis: macrophages and microphages.

3. *Rôle of phagocytes in natural immunity*—(a) *Daphnia* and monospora bicuspidata; (b) immunity of the frog to anthrax; (c) immunity of the hen to anthrax; (d) immunity of the pigeon to the tubercle bacillus; (e) immunity of the rat to anthrax; (f) immunity to streptococci (virulence and sensibility of animal body); (g) resistance to tetanus spores.

4. *Rôle of phagocytes in acquired immunity*—(a) *Cholera and Pfeiffer's reaction*—Experiments of Metchnikoff and Bordet—*Phagolysis*. Conception of the complex constitution of bacteriolysins—Complement and amboceptor—Absence of complement in circulating plasma. Immunity to cholera may exist in the absence of the intervention of bacteriolysins. (b) Immunity (acquired) to Rouget du Porc. (c) Immunity (acquired) to streptococci.

Mechanism of phagocytosis.—*Chemiotaxis*—Researches of Manart and Bordet, Werigo—Intervention of *opsonins*—Definition of opsonins—Researches of Denys, Leclef, Marchand

—Sawtchenko's experiment—Researches of Wright and his school.

Nature of opsonins—*Normal opsonins*—*Specific opsonins* (immun-opsonins)—Researches of Muir and Martin, Levaditi, Neufeld.

Mode of action of opsonins—Researches of Levaditi and Mutermilch, Sawtchenko, Rosenow—*Rôle* of the microbic envelope—Attachment of microbes to phagocytes, and mechanism of this attachment—*Rôle* of the complement.

MEETING IV.—25TH NOVEMBER, 1910.

PROFESSOR RALPH STOCKMAN *in the Chair*.

I.—CASE OF ETHMOIDAL MUCOCELE.

BY DR. A. LEWIS M'MILLAN.

This communication is published in the *Ophthalmic Review* for January, 1911.

II.—A LARGE SARCOMA REMOVED FROM THE ORBIT.

BY DR. A. LEWIS M'MILLAN.

The specimen shown by Dr. M'Millan was a large melanotic sarcoma removed by him on 20th August, 1910, from the orbit of a patient whose eye had been removed by Dr. Fergus on 6th September, 1897, for suspected tumour. The growth was removed for the relief of pain.

Dr. M. Logan Taylor showed sections of both mucocoele and tumour.

III.—VACCINE THERAPY IN RHEUMATOID ARTHRITIS AND ALLIED CONDITIONS.

BY DR. LYON SMITH (London).

May I be allowed to say how highly I appreciate the privilege of reading a paper before this Society. It recalls

the many happy days I spent as a Glasgow student, and reminds me of the gratitude I owe to my teacher and friend, Dr. Newman, for having, when he was pathologist at the Royal and I was his assistant, tried to make me work.

For the last two years or more I have given up active general practice and have been struggling to understand something of the great mystery of immunisation. When I worked at bacteriology in Leipsic many years ago, there was no question then of applying bacterial knowledge to therapeutics.

Serum and vaccine therapeutics are still in their infancy; we are only on the edge of a great field which offers enormous possibilities of most fascinating work to all those who care to explore it.

I do not propose to discuss to-night the principles of the infective processes at work in so-called rheumatoid arthritis, nor the pathological histology associated with it. For a general practitioner in his arduous calling, the copious, exact note-taking which my old clinical professor (Sir William Gairdner) showed us how to do, is absolutely impossible, so I must crave the indulgence of the Society for the crudeness of this essay. The old habit of taking a wide survey in a hurry, incapacitates one for minute researches and scientific accuracy of detail. The impressionist school and Glasgow in another branch of art have long been associated!

Arthritic and neuritic affections before the introduction of vaccine treatment were most unsatisfactory cases. Where cures did occur, it was probably because the attendant by chance hit upon some happy method of stimulating the natural powers of recovery of the patient. The discovery of the association between the gonococcus and its special forms of arthritis and the test application of gonococcal vaccine appears to have been the first step towards a successful line of treatment. The tubercular infections of joints have been better treated by inoculations of tuberculin than by any previous methods of treatment. In Sir Almroth Wright's clinic, at St. Mary's, I have watched the course of a number of these cases, and it was a revelation to me to see the rapid way in which curative processes were established. In the arthritis and neuritis which follows a Malta fever affection, I had the painful interest of studying the symptoms in my own joints and nerves. I was accidentally inoculated whilst working under Sir Almroth Wright, at St. Mary's, in November last year. The joint and nerve implications did not occur until three months later, when my left wrist and two joints in my

left thumb became severely inflamed, and my right sciatic nerve was the seat of intense pain. Then I personally discovered that quinine, aspirin, phenacetin, and other analgesics were worse than futile, and that only morphia hypodermically assuaged the pain. It was not until Dr. Matthews injected Malta fever vaccine that my symptoms began to subside; they relapsed after six weeks, but a fresh strain of vaccine, kindly sent to me by Dr. Fleming, of St. Mary's, quickly cleared up the trouble. In these three types of arthritis, one has the advantage of knowing beforehand what form of vaccine to use, but when one has to deal with a case of rheumatoid arthritis, one is not on such sure footing. It is not a case of a known organism producing a definite series of symptoms. One has to hunt about for whatever microbes one can obtain from the patient's mouth, from the tonsils; and in the case of women (and the majority of these cases occur in women) one must investigate the question of uterine infection. Then, having collected our series of possible offenders, two courses are open to us—firstly, that of taking the opsonic index of the patient towards each group of microbes, and selecting those organisms which give an abnormal index for the basis of our vaccine treatment; in the second method, the one which I have so far adopted in the five cases which I have had to treat, has been to select the most likely offender. Here, perhaps, it would be as well if I gave a brief account of my first case, because it shows a fairly typical example of the technique that one uses.

CASE I.—This was that of a lady, aged 63, who had had a family of six, and the earliest symptom of her affliction occurred after her second confinement, when she was troubled for some time with pains in her knees, but they passed off, and it was not until eight years ago that she developed well-marked arthritic symptoms. Her knees were swollen, extremely tender, stiff, and contracted, so that it was impossible for her, or anyone else, to straighten her legs. A factor in the causation of her illness was apparently long continued mental and physical strain. This seems to have been the chief depressing agent which lowered her natural resistance to certain infective organisms. When I first saw her she was able to walk very feebly indeed, and only with the aid of crutches or sticks. In addition to pains in the knees, her hands and ankles were painful, and her right sciatic nerve had been the seat of a good deal of pain, but

when I saw her her hands were quite supple and shapely and had ceased to trouble her. She had derived very great benefit last year from two long courses of Swedish massage from Dr. Kelgren, but unfortunately she soon relapsed when the treatment was discontinued. It had also the disadvantage of being extremely painful. In hunting for the bacterial source of her trouble the first thing discovered was that most of her teeth had been undermined and lost through pyorrhœa alveolaris. The gum round the one upper incisor still remaining presented a swollen inflamed circle. From recesses between this tooth and the gum I obtained smears from which I made fresh films for examination, and inoculated agar tubes and glycerine agar tubes. From the recesses in her tonsils I also inoculated tubes, and as there was a history of leucorrhœa, I took cultures from the interior of the uterus. The result of my haul was—(1) Gram-positive diplococcus, in appearance resembling the pneumococcus, (2) some staphylococci, (3) short streptococci, (4) some large Gram-positive bacilli (*bacillus vaginæ*), and (5) lastly, but perhaps most important, small diplococci, some of which were partly decolourised in the process of Gram-staining.

If I may digress at this point, it will be to say a few words on the subject of this diplococcus.

In morphology and in the cultures, it corresponds to the organisms described by Dr. Mantle, of Harrogate, some twenty years ago, when he obtained it from the arthritic fluid and from the tonsils of cases of rheumatic fever under his care. Drs. Poynton and Paine rediscovered in 1899 a similar diplococcus, possessing very much the same characters, which has been termed the *diplococcus rheumaticus*, and I propose to show some evidence in support of its title to that name.

Cultures in glycerine agar, within about twelve hours, at a temperature of 37° C., show a film of minute transparent colonies resembling very fine dew. They never attain any great size, nor do they coalesce unless very thickly planted. At the end of about six days, there is a pale yellowish tint with transmitted light, and the medium itself is usually darker in colour and of a pale greenish-yellow. The surface of the medium is slightly liquefied, the colonies at this time are still discrete, and of circular form with regular margin.

In the culture media, as shown in my diagram, they develop short chains, from eight to twenty links. I have not seen any of the long forms that one finds amongst the other

streptococci. It is no doubt a member of the streptococcus family, and Andrews and Horder find that it corresponds with the streptococcus faecalis. I have tried it on ordinary agar, glycerine agar, ascitic serum, blood agar, but have found the best growth on glycerine agar. I have not tested it on other media, nor have I had time to test its sugar reactions.

To turn to my case, a vaccine was prepared from the diplococcus I have been describing, on the assumption that it was the rheumatic diplococcus, and because it was present in the gums, the tonsillar recesses, and the uterus. The first inoculation was 7 millions, which I injected just above the left knee. Five days later, I injected 12 millions of her own diplococcus, and 120 millions of a staphylococcic vaccine. A week later I injected 15 millions of her own diplococcus and 220 millions of staphylococci. During this period of fourteen days her symptoms of pain, discomfort, and general distress were markedly worse, but she discovered on the sixteenth day that she could walk without the aid of her sticks or crutches, and her worst knee was undoubtedly less swollen. The neuralgic pains in her neck were still very troublesome. Five days later, I reduced the dose to 4 millions of diplococci, and the next inoculation was also 4 millions, and the improvement in her walking was quite as marked with these small doses as with my larger initial doses.

The assumption of a secondary infection as an independent cause of her neuritis arose from the fact that in her past history there was an account of an illness which was either appendicitis or colitis. I drew a bow at a venture, and gave her 10 millions of a coliform vaccine obtained from another patient suffering from colitis with arthritic complications. I gave her this dose at bedtime. She said it took away the sting or pain, but did not remove it entirely, so three days later we gave her 15 millions more of the coliform vaccine at bedtime in milk.

At this stage, four weeks from the beginning of our treatment, the patient's general condition was enormously improved. She looked better, her sleepless nights had been replaced by natural restful sleep, and she could walk a quarter of a mile. She could get up and down from her chair quite alertly without any help. Altogether she had had nine injections by the end of the sixth week, and, in addition, the two doses of coliform vaccine taken by the mouth.

She then left London and went down to Bournemouth, to pay a long-promised visit to some friends, and at the same

time to have hot seawater baths and massage in the hope of regaining her lost muscle power and losing some of her contractures. I should have said, perhaps, that from the first the affected joints had been daily bathed with strong, and very hot, salt water for about ten months, to promote the lymphatic lavage, upon which Sir Almroth Wright lays considerable stress. It corresponds, in fact, in some degree with Bier's congestive treatment. Three times a week there hot salt water vaginal douching was used. Her diet was liberal; she took mutton or beef twice a day, and also one or two glasses of port old in wood.

She stayed in Bournemouth six weeks and continued to improve, but it seems possible that she attempted to progress too rapidly, that she got overtired, that the massage was pressed a little too far, and her own impression was, in addition to this, that the effect of the inoculations was beginning to pass off. She had some vaccines by the mouth, but did not respond to them in the same way as when they were injected. She returned to her home in London better than when she left, but not so much improved as we had hoped for. The first thing she did on her return was to have a severe attack of influenza, so the treatment of her rheumatoid arthritis was discontinued until she had got over the "flu." She had had several attacks of influenza, but had not been treated before with influenza vaccines. She was treated on this occasion with 5-million doses of influenza vaccine combined with 4-million doses of pneumococcal vaccine on account of her severe tracheal cough, and she made a quick recovery.

We have now gone back to 4 millions of her diplo-vaccine, and propose to continue this at intervals of gradually increasing length during the next twelve months, or longer if necessary.

She cannot be set down as a complete cure for vaccine therapy, but she is very hopeful, because with our inoculations she seems to make further gain, and her progress seems to her little short of marvellous as compared with the other forms of treatment adopted earlier in her case.

(To be continued.)

REVIEWS.

A Text-Book of Medical Jurisprudence and Toxicology. By JOHN GLAISTER, M.D. Second Edition. 1910.

A Text-Book of Public Health. By the same Author. Second Edition. Edinburgh: E. & S. Livingstone. 1910.

It was, perhaps, inevitable that in the first edition of a work of this magnitude and originality—a work in which the author broke loose from the traditions which appeared to obsess all the older and most of the modern writers upon these subjects—there should have been numerous, if, on the whole, trifling errors both of commission and omission; but in the volumes now under review these have been corrected with such a degree of completeness that the whole forms practically a new work.

With the enormous amount of labour involved in the preparation of a first edition so recently as 1902, many authors would have contented themselves with revision and minor corrections and amplifications. Not so here: the author has not only brought the information in every chapter absolutely up to date, but has so entirely recast and rewritten the whole that not more than a superficial resemblance exists between the two editions. The result is that we have in these two volumes a work on these subjects which, it is quite fair to say, has no rival in the English language. The explanation of this will be found, partly at all events, in what follows.

Perhaps the most patent error in the first edition was the attempt to combine the whole in a single volume. Looking at the fact that the work, taken as a whole and outside of class purposes, necessarily appeals to two distinct sections of the profession, the author has been wise at the first opportunity to divaricate the subjects, making public health the material for a separate volume.

Turning to Vol. I, it will be seen at once that the author has now supplemented the actual facts by numerous illustrative cases, which have been drawn mainly from his own wide experience. In this respect the work is probably unique. Even the classic tomes of Tidy, in which the illustrative cases

quoted are numerous, cannot bear comparison in this direction with the volume now under review. Owing to the extensive and ever judicious use of such cases, Professor Glaister's book in many parts reads almost like one on the romance of crime itself. In this direction, moreover, the author has wisely confined himself, where he gives cases *in extenso*, mainly to cases which have transpired in comparatively recent years, so that the reader in most cases has already some knowledge of, and therefore greater interest in, the details presented to him.

The general plan of the work remains the same as in the first edition, and as the latter was fully reviewed in our pages shortly after publication, it is not necessary to refer to all parts in detail. It has already been said that most of the errors in the first edition have been corrected, and it is mainly in the new matter that a few points call for detailed investigation.

Chapters I and II, dealing mainly with the legal aspects of the subject, are remarkably full and accurate; more than this cannot, and need not, be said. In the light of what, now-a-days, we understand as the shape of a soda-water bottle, however, it might be well if the author found another term for the appearance of drops or spirts of blood projected on a plane surface (p. 32). On p. 34, line 10 from foot, the word "when" is redundant.

In the section on identity, the finger-print method, amply illustrated, will be read with particular interest in view of the recent death of Sir Francis Galton, who was the first to elaborate a classified system on this basis. Cases crop up from time to time in which the accuracy of this method has been impugned, but in no case has it been proved to fail; and there can be little doubt that in time this method will be applied to other purposes than the detection of criminals. In fact, it is already so applied, and a few of these instances are quoted by the author. One instance not mentioned is that in the Argentine Republic each applicant for a motor licence is required to adhibit prints of the whole of the fingers of both hands in proof of identity. There is here a suggestion for the issue of tickets for the forthcoming Scottish Exhibition at Glasgow.

Chapter VI, dealing with death certification, will be of the very greatest help to the general practitioner, whose knowledge of his rights and duties in this respect are not uncommonly rather vague.

On p. 167, in the chapter on "Medico-legal forms of death,"

fixation of chest walls is given as a cause of death from suffocation. This statement is probably only partly correct; so long as the movements of the abdomen (and consequently of the diaphragm) are unimpeded, fixation of the chest walls will only embarrass respiration. This was well shown a number of years ago in a case where a miner was pinned down by a fall of coal on his chest; he was able to breathe with comparative comfort while efforts for his release were made, but by ill-judged efforts to extricate him the mass of coal was transferred from the chest to the abdomen, death quickly following.

On p. 172, in the definition of hanging, the student must note that only a very small fraction of the body-weight is necessary to cause death in this way; this is quite properly pointed out on p. 181.

On p. 178 it is stated that a *post-mortem* dissection is not permitted in cases of judicial homicide. This is certainly not strictly adhered to, in the reviewer's own knowledge, and it is also well known that in the case of some of the bodies recently disinterred at Jail Square such an examination had been made.

Chapter X, on wounds and their medico-legal relations, is admirable alike with respect to its scope and detail. The author's definition of a "penetrating" wound should be strictly adhered to; the word formerly was employed rather loosely.

In the description of Fig. 71, p. 298, it is stated that the arborescent markings are due to *post-mortem* lividity; in fact, they are due to mapping out of the superficial veins as the result of incipient putrefaction, and on p. 137 this is indicated correctly.

In the chapter on blood-stains, the author, while giving due prominence to the serological tests for blood, wisely states that in the present state of our knowledge the medical witness should state his inability to answer the question, "Is the blood that of a human being?"

Chapters XII, XIII, and XIV deal with the various problems concerning the sexual functions and relations, including abortion, infanticide, rape, and defloration.

The short chapter on the differential diagnosis of states of insensibility is admirable. The author properly emphasises the value of Macewen's test in insensibility due to alcoholic poisoning.

Chapter XVI is a long one, and deals with lunacy in its medico-legal aspects. Ample as it is, however, it is still doubtful whether this is not really a distinct branch of

legal medicine with which experts in this branch alone should deal.

The second section of this volume deals with toxicology entirely, and its size is an earnest of the wide ramifications of this important branch of medico-legal work. Probably in the near future we shall find that this subject will be dealt with in a volume by itself. Even as it is, the law which requires the practitioner, if called upon, to make both a *post-mortem* examination and a chemical analysis of the stomach-contents, is more honoured in the breach than the observance. Considering that in many cases in which a chemical analysis is required it may not be the stomach-contents at all, but those of the intestines or urinary bladder, or the solid organs which require examination, the wording of the summons (p. 7) is quite obsolete.

On p. 576, the silver test recommended in suspected poisoning by hydrochloric acid is useless, as normally the stomach-contents contain both free HCl and abundant chlorides. In giving the physical properties of arsenic, on p. 592, the author ascribes the peculiar behaviour of white arsenic powder when thrown upon water to its insolubility, but other white powders equally insoluble do not behave thus. On p. 678 it is stated that there does not appear to be any method yet devised for the detection of sulphonal in the body, owing to its being decomposed. Sulphonal is really a very stable substance, and if taken in quantity may be isolated from the urine, and the mercaptan and sulphocyanide tests may be applied even where hæmatoporphyrinuria is absent.

The paragraphs on pp. 675, 676 on "Legal responsibility in deaths during anæsthesia" should be carefully studied; there is much misconception in both medical and lay minds with regard to this point. Pp. 740 to 754, dealing with food poisoning, include a valuable table showing the main outbreaks of this in recent years in Great Britain and Ireland.

The proofs of this volume have been well read: only on pp. 352 ("spermatozo") and 602 ("soluable") are errors noted.

The illustrations are numerous and excellent on the whole, though exception may be taken to Fig. 108 and those illustrating spermatozoa and gonococcus.

The use of smaller type for the illustrative cases is a distinct advantage.

The references throughout are copious, and nearly all are recent, as already indicated.

Volume II (*Public Health*) embodies the result of many

years' experience in every department of public health work on the author's part. Even here it is certain that further sub-division must inevitably take place, and perhaps before long the author may be tempted to publish a separate volume on practical public health work. There is ample room for a really first-class book confined to this section, and Professor Glaister's long experience in this direction would ensure such a book being a complete success. The practical methods are all given here in detail, but for actual working it would be a great improvement if these were properly and copiously illustrated.

Dealing with the duties of the medical officer of health, the system adopted by the author of using parallel columns for the regulations in Scotland and England respectively is a happy thought. This system is adopted throughout in cases where the regulations and Acts in the two countries differ in detail, and the extra space taken up is more than compensated for by the results thus obtained.

Chapter II, "Vital statistics and statistical returns," could hardly be improved upon, and will be read with additional interest at present when the decennial census is about to take place. Many important results will follow the census of 1911, and a number of these are indicated in this chapter. For example, it is doubtful whether the Registrar-General's method of estimating the intercensal populations should be employed in future, at all events in the larger centres of population, when method B (page 29) is available. On page 37, sterility in marriage is reckoned as if it were a prerogative of the wife alone; it seems hardly fair to either party to neglect the husband's possible share in this result, although, as figures merely, the statistics are accurate. The deep problem of infantile mortality receives careful attention in this chapter, and the figures prove that much still remains to be done before the blot of high infantile mortality in the cities and towns is wiped out. In this connection the author describes the establishment of municipal milk depôts, but makes no reference to the final result of this measure in Glasgow.

The warning given on page 57, with reference to the gradually increasing number of unvaccinated persons in the country, should be carefully noted by all who have to do with public health administration.

Quetelet's four golden rules as to statistical investigations, given on page 74, are so important, and are so frequently disregarded, that they deserve even greater prominence

than is given them by the author. Scarcely a day passes without instances occurring in the daily, and even the medical, press in which gross inaccuracies are set forth from disregard of these rules. Figures cannot lie *if used properly*, but like the results of the camera they may be used in such a way as to distort the truth out of all semblance to actuality.

The description of the construction of life-tables reads like a romance, uninviting though it may seem when superficially scanned. No student of public health problems can afford to study this in any but the most thorough and conscientious manner.

Chapter III deals with meteorology, including climate. If any fault can be found here, it is that the space which the author devotes to this section is too small. Further, the use of many more illustrations would have enhanced the value of the chapter considerably. For example, the description of the spirit maximum and minimum thermometer on page 84 would have been more easily understood by a figure. On the same page no indication is given as to the direction in which the blackened bulb *in vacuo* of the solar radiation thermometer should be placed. In the same paragraph the exact position of the minimum thermometer should have been indicated.

On page 88 there is room for better definitions of "relative" and "absolute" humidity. On the same page attention is very properly drawn to the harmful effects on the human system of air which is deficient in moisture. So far no practical method has been devised for overcoming this in actual practice.

On page 97 it is stated that in anti-cyclones we are apt to have fogs in towns and cities: this applies more particularly, and indeed almost exclusively, to the winter season, as summer anti-cyclonic systems are usually accompanied by clear weather alike in towns and in the open.

Chapter IV, dealing with air and ventilation, gives an exhaustive account of these important subjects, and the numerous illustrations in this chapter are most valuable.

Dealing with heating and lighting (Chapter V) the author has the courage to point out in no uncertain terms the disadvantages of the use of delusive and dangerous flueless stoves. It must be apparent that where the oxygen of the apartment is utilised for the combustion of the heat-producing material this must vitiate the air, not only by the abstraction of the oxygen but by the production of excess of moisture, CO_2 , and even more harmful impurities.

In dealing with electric lighting, the author, for once in a way, is not up to date in describing the incandescent filament as *carbon*; the latter has now been to a great extent supplanted by metallic filaments.

Chapter VI, on water and water-supply, is excellent, a result which is contributed to in some measure by the inclusion of the laws dealing with water-supply to the community. In this chapter there is a slight inaccuracy on page 171: it is not correct to say that at Aden the *sole* source of water-supply is the rainfall, as the European population there largely depend upon distillation for their supply. The various epidemics which have arisen from polluted water are set out in detail.

The chapter on house drainage deserves special mention. It is more than usually complete in detail, and the author's special and long practical experience in this branch of public health is reflected in his treatment of the subject. On page 233 (top) Professor Glaister points out that the window which is supposed by the regulations to ventilate the w.c., more often than not simply serves as an *inlet* for outside air, which thus enters the house through the w.c. itself. In this chapter also the illustrations are numerous and well selected.

The problems of sewage disposal, and the laws relating thereto, are fully gone into in Chapters VIII and IX, and every point of importance is most carefully dealt with.

Preventable diseases form the subject in Chapter X. Here, on page 343, one is surprised to see it stated that certain diseases, the causes of which are as yet undetermined, are due to micrococci, for example, small-pox. Otherwise this is perhaps the most up-to-date history of preventable diseases to be found, and the author's experience of the epidemics of plague and cerebro-spinal fever in Glasgow in recent years adds much to the value of this chapter. Vaccination is gone into in some detail, also the important items of typhoid "carriers," and the geographical distribution of preventable diseases. On page 432 the author makes no reference to Koch's "B.E.," which is now largely used for inoculation purposes.

The chapter on disinfection is again an excellent one, and in this connection Table XLVI, on page 450, will be found of very considerable value. On page 451 it is stated that formalin in 5 per cent solution kills the *bacillus anthracis* in fifteen to eighteen minutes, and the spores of anthrax in five minutes: this seems strange when it is remembered

that the spores are much more resistant to the action of disinfectants than the bacilli themselves.

Chapter XIII is an epitome of the sanitary laws relating to infective diseases, and thus calls for no special description. Nevertheless it must be apparent that an epitome of this kind is most valuable, to the student especially, as he can only be in fairness expected to be acquainted with the main provisions of the law in each case.

A succinct account of isolation hospitals is given in the following chapter, with illustrations of such hospitals at Glasgow, Edinburgh, and Motherwell.

Chapters XVI and XVII deal with the law as to nuisances and the law relating to the sale of food respectively.

Chapter XVIII gives a short account of the diseases of occupations, including the effects of occupation on health, and the main provisions of the Factory and Workshops Acts.

There are two appendices. Appendix I gives the main provisions of the Anthrax Order of 1910 (which is now in operation). Appendix II gives the regulations affecting the disposal of the dead in the three divisions of the United Kingdom, including cremation, and the bye-laws for the regulation of cemeteries.

In every respect the second volume sustains the same high standard as the first. The illustrations, as a rule, are excellent, the only exceptions being Figs. 49 (*Spirillum rubrum*), and 114 and 115 (*Anthrax*).

Skin and Venereal Diseases. Miscellaneous Topics. Edited by W. L. BAUM, M.D., HAROLD N. MOYER, M.D. Series, 1909. Chicago: The Year Book Publishers. (Glasgow: G. Gillies & Co.)

THIS is vol. ix of the Practical Medicine Series, comprising ten volumes on the year's progress in medicine and surgery, under the general editorial charge of Gustavus P. Head, M.D., of the Chicago Post-Graduate Medical School.

The editors are to be congratulated on the way they have performed their task—a by no means easy one in the face of so much that is new in the domain of therapeutics, &c.

The second section of this volume, as its title implies, covers a wide field of interesting and suggestive subjects, including reviews of articles on physical degeneration, workmen's compensation, the birth-rate, &c.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE A. ALLAN, M.B., CH.B.

M E D I C I N E.

The Thymus Treatment of Carcinoma. By Y. Takaki, M.R.C.S. Eng. (*Sei-i-Kwai Medical Journal*, 30th September, 1910).—Dr. Takaki only refers to cases of inoperable carcinoma, and after trials with Colley's fluid, chloride of zinc paste, trypsin, and thyroid extract comes to the conclusion that best results are to be obtained from the administration of dried thymus gland. He mentions successful cases reported by Dr. Gwyen of New York. His own cases are as follows:—

CASE I. Adenocarcinoma of glands in the neck.—*History:* Patient, æt. 33, noticed a small swelling on the left side of the neck three months previously, which became gradually larger and more glands became infected. There was no fever or pain. Latterly the patient complained of pain in the throat and some difficulty in breathing.

Examination.—Patient was a well-built, strong man. The neck was greatly swollen in front, especially on the left side. The skin was shiny and tense, with slightly enlarged vessels, and pitted on pressure. Slight pain and tenderness were present. The tumour, of indefinite size, was soft, and spread across middle line to the right side. The throat was slightly congested. The left arm was swollen down to the fingers and could not be moved.

As the patient complained of gradual increasing difficulty in breathing and swallowing, and the diagnosis was uncertain, an operation was performed which showed the malignant nature of the tumour and the impossibility of its removal. Thymus treatment was started. Two days afterwards the patient did not complain of pain in the throat and seemed easier. The tumour became softer. Five days after, some pus was discharged, and this continued, the tumour becoming softer and softer. Once a quantity of pus was discharged through the mouth. By that time the patient felt much easier, and the difficulty in breathing had almost completely disappeared. The patient died two months later.

Results.—(1) Disappearance of pain; (2) diminution in size; (3) softening and suppuration; (4) the swelling of the left arm was much diminished and slight power of movement returned.

CASE II. Carcinoma of tongue. Ulcer of tongue, of increasing growth of five months. Examination showed that the ulcer was extensive, spreading almost all over the tongue as far as could be seen. It was painful and the surface was irregular. The whole tongue is thickened and hard. The induration seemed to extend as far as the root of the tongue. Owing to pain and the size she could not take food properly, and was already showing signs of cachexia. The glands under the jaw were enlarged.

After a few doses of thymus the pain became less and she could take food more easily. After a week's treatment pain occurred very rarely. The tongue became darker in colour. The treatment was continued up to the time of her death, six months later. The carcinomatous portion of the tongue seemed to become necrotic, and separated a few days before death.

Results.—(1) Disappearance of pain; (2) arrest of the growth to some extent; (3) the tumour became necrosed.

CASE III. *An extensive carcinoma of penis and scrotum.*—Patient, æt. 57, had ulcer on the glans penis for a few months. Its growth was very rapid. Examination showed the penis and scrotum to be destroyed by a large malignant growth. The inguinal glands were extensively involved. Pain was considerable. Thymus was given, which had the effect of relieving the pain.

CASE IV. *Carcinoma of penis.*—This patient, æt. 56, was found to have a carcinoma of the penis, secondary to a warty growth under the prepuce. The tumour affected the whole glans penis and surrounding skin. In the left inguinal region there were a few slightly enlarged glands. Although there was fear of recurrence, the penis was only amputated for two-thirds of its length, and the inguinal glands were not touched. Thymus treatment was given for three months. There was no sign of recurrence fifteen months later.

CASE V. *Spindle-celled sarcoma of pelvis with secondary growth on left scapula.*—The scapular tumour was removed, and was found to be sarcomatous. The pelvic tumour was not touched, but the patient was given thymus. Before his death, four months later, the pelvic tumour became smaller and the scapula tumour did not recur.

In another case of a large sarcoma of the abdomen thymus was given, but beyond relieving the pain no further benefit seems to have been derived from its administration, as the tumour grew very rapidly. Dr. Kishi, acting on Dr. Takaki's advice, gave thymus to a patient suffering from an extremely painful malignant ulcer of the throat. The pain was abolished after a few doses of the preparation.

Dr. Takaki uses the fresh calf's thymus gland dried at a low temperature and powdered. It is given by the mouth in from 0.01 to 0.05 grms. thrice daily between meals. As it disturbs digestion it is best to give it in small doses at first. The effect of the drug on the general constitution must be carefully watched.

Conclusions.—(1) Pain is abolished; (2) the thymus powder seems to have some power of disintegrating the tissues of the malignant tumour by suppuration or necrotic changes; (3) the size of tumour was in one case diminished and in two cases became smaller by disintegration; (4) it seemed to retard the tumour growth; (5) it has more effect on carcinoma than sarcoma; (6) indigestion is apt to occur.

Although the cases are few, yet this treatment might be adopted in those inoperable cases, because it lightens the course of the disease and makes the final end more comfortable and easy.—D. ROSS KILPATRICK.

Arthropathy of the Shoulder due to Syringomyelia. By Drs. Villard and Alamartine (*Lyon Medical*, January, 1911).—The patient was a woman of 48 years, with no previous illness, who for the past six months had an arthropathy of the right shoulder, which showed all the signs of a nervous arthropathy, *i.e.*, loss of power, considerable effusion, abnormal movements with true dislocation, very well-marked network of superficial veins, &c.

The condition has progressed apparently by very slight traumatisms. Skiagram shows that the head of the humerus has completely disappeared, just as in a resection of the shoulder. On tapping the joint a clear, faintly citron-coloured fluid was obtained. The patient has not had syphilis. She is not tuberculous. She has no signs of tabes, the knee reflexes being exaggerated. There exists on the right side, notably at the level of the limbs (particularly the upper), hypæsthesia with hypoalgesia, and a very definite thermo-anæsthesia. The patient burns her fingers without feeling any pain. There is no muscular atrophy or any other signs of syringomyelia.

—D. ROSS KILPATRICK.

SURGERY.

Ulceration of the Jejunum after Gastro-Enterostomy. By P. D. Wilkie, Edinburgh (*Archiv. générales de Chirurgie*, December, 1910).—With a view to ascertaining further the etiology of this condition, Wilkie has conducted a number of experiments on cats, and has examined microscopically the gastro-enterostomy suture in all cases. He corroborates Gould and Harrington in finding that the sutured mucous edges rarely heal by first intention, that there is practically always some necrosis of their edges, leaving a small wound to heal by granulation, which takes from five to ten days to heal.

The experiments deal chiefly with the effect of hydrochloric acid given after operation, solid feeding immediately after operation, and the nature of the material used for sutures. His conclusions are—

1. Gastric hyperacidity, in itself, does not cause post-operative jejunal ulceration.

2. The cut mucous edges heal by granulation, necessitating about seven days for cicatrisation.

3. Trauma, in the form of solid food, by passing over the granulating surface, is an important factor in retarding healing.

4. Marked hyperacidity may tend to retard healing, and may lead to extension of the ulceration.

5. The presence of a non-absorbable suture in the line of granulation retards healing, so that catgut is to be preferred to silk for the inner suture. (In the experiments the worst results were obtained where silk had been used to suture the mucous membranes, as, in most cases, it was found protruding into the lumen.)

6. In cases where gastro-enterostomy is performed, the functional closure of the pylorus is readily effected by one or two Lembert sutures, which take a deep grip of the muscular tissues.—ROY F. YOUNG.

DISEASES OF THE SKIN.

Herpes Facialis in Scarlet Fever. By J. D. Rolleston, M.D. (*British Journal of Dermatology*, October, 1910).—Having recently investigated this eruption in diphtheria, the writer thought a similar inquiry in scarlet fever would be of some interest. Schamberg estimates its frequency at 3 per cent, at the same time acknowledging that he has no available figures. The present note is based on observations made on 413 cases of scarlet fever. Herpes facialis was noted in 6.5 per cent of the cases, a figure slightly exceeding that found by the writer in diphtheria, in which it occurred in 4.2 per cent of 1,370 cases, and about the same as that occurring in influenza, in which it was found by the German investigation committee to exist in 6 per cent. Scarlet fever, therefore, comes fourth in the list of acute infectious diseases in which figures of the frequency of herpes facialis are available, following at a long distance pneumonia, malaria, cerebro-spinal meningitis, in each of which it occurs in about 40 per cent. The lips were the parts mostly affected. None of the cases showed the extensive distribution, atypical localisation, and relatively long duration which are characteristic of the eruption when it occurs in cerebro-spinal meningitis. The lesions in every case healed rapidly and left no scar.

Like the facial herpes of diphtheria, it is essentially a phenomenon of the acute stage.

Herpes zoster, an occasional sequela of acute infectious disease, was not observed.

No diagnostic value can be attached to herpes facialis in scarlet fever, the eruption being about equally frequent in scarlet fever and diphtheria, and much commoner in angina, due to other causes, in which it was found in 13.1 per cent.

As regards the prognostic value of herpes facialis, the eruption was more frequent in the severe than in the mild cases, as in diphtheria.

Though a bacteriological examination of the throat made in a few of the cases did not reveal the presence of any organism other than a streptococcus, the writer states that the possibility of a pneumococcal infection must not be forgotten, even in the absence of a pulmonary localisation, and mentions that Lafforgue, in an interesting paper on pneumococic angina at the onset of scarlet fever, has recently recorded three cases in which the faucial symptoms, instead of being due to the streptococcus, were associated with the pneumococcus in almost pure culture. Though none of his cases had pneumonia, nor any pneumococcal localisation beyond the angina, two presented extensive labial herpes.

According to Schamberg, the three varieties of herpes—herpes facialis, herpes progenitalis, and herpes zoster—are due to the development of some toxin which has a special affinity for nerve tissue, especially for the cells of sensory ganglia. This hypothetical toxin is not due to any definite micro-organism, and the eruption may therefore follow various infections.

The writer is of the opinion that the frequency of herpes in some diseases, such as pneumonia, and its rarity in others still requires some explanation.

—WM. BARBOUR.

Molluscum Contagiosum and its Distribution. By Norman Walker (*British Journal of Dermatology*, September, 1910).—Dr. Walker in looking over the records of his cases since 1910 finds that of 45 cases 18 were in the habit of frequenting swimming baths, and is of opinion that the proportion would have been greater, as in his earlier cases, those of 1908, not so much attention was given to the matter.

He is not inclined to accept Dr. Graham Little's suggestion as to the connection between the disease and seaports. He is more inclined to look to public swimming baths as the means of its spread, and remarks that it would be interesting to inquire into the amount of patronage accorded to these in the different centres. When in Damascus he learned that it was known locally by an Arabic name as "the itch of the bath." He is almost inclined to claim for Edinburgh a certain amount of credit for the frequency of molluscum in its midst.—WM. BARBOUR.

A Case of Rounded Ulcers.—Dr. T. Colcott Fox (*British Journal of Dermatology*, December, 1910) exhibited a case of rounded ulcers at the meeting of the Dermatological Section of the Royal Society of Medicine in November. The patient was a childless married woman, aged 43 years, with a group of rounded ulcers on the left arm above and over the elbow-joint. The first lesion began with a "pimple" in October, 1909. In January, 1910, she was an in-patient for a diseased heart and rheumatic pains. When first seen by Dr. Fox, she had an intractable round ulcer on the arm, and he could only get it to heal when the dressing was sealed up with collodion. When healed another similar ulcer appeared in the immediate neighbourhood, with the same characters, only healing under collodion dressing. A third and a larger fourth ulcer appeared in the immediate neighbourhood when those previously existent healed. Dr. Fox remarked that such a case presented much difficulty. He failed to assign it to any cause, such as syphilis, and strongly suspected an artefact dermatosis, though the patient was not strikingly hysterical.—WM. BARBOUR.

On the Relationship between Roseola Syphilitica and some other Syphilides: Leucoderma Syphiliticum, the Early Circinate Syphilide, the Small Follicular Syphilide. By H. G. Adamson, M.D. (*British Journal of Dermatology*, September, 1910).—Dr. Adamson is of opinion that leucoderma syphiliticum, the early circinate syphilide, and the small follicular syphilide are all later stages in the evolution of the roseola syphilitica.

Leucoderma syphiliticum.—As regards this syphilide he states that it is admitted by many authorities that leucoderma syphiliticum is a sequela of the macular roseola. He has recently observed several cases which have presented an early macular syphilide upon the trunk and neck, and in which there was also upon the neck the early stage of the development of a leucoderma syphiliticum. The evolution of the leucoderma areas from the macular could easily be demonstrated. Some of the macules on the neck had commenced to pale at their margins; others had been already replaced by white areas, while some of the white areas had at their centre a hyperpigmented spot. This well-known hyperpigmented spot is explained by Brandweiner as the sequela of a more marked infiltration at the centre of the macule, in agreement with the rule that a papular lesion tends to leave pigment, and that less infiltrated or macular lesions tend to remove it.

The early circinate syphilide (or annular or arciform syphilide).—Several forms of circinate syphilide are described, but that to which the writer refers is an early eruption occurring especially upon the face, about the mouth, nose, and chin, in the form of pale, yellowish red, slightly scaly rings, arcs of circles, or gyrate figures. It is said to be rare, but pathognomonic of syphilis.

The point which the writer wishes to emphasise is that this early syphilide is evolved from the early macular syphilide. He quotes several cases, of which photographs are given, illustrating the co-existence of the early circinate syphilide upon the face and the macular roseola upon the trunk. Several of the lesions upon the face were scarcely more than macules with raised and slightly scaly margins.

The small follicular syphilide.—This eruption (lichen syphiliticus) consists of pin-headed follicular papules arranged in groups, which may be few or many, and intermixed or not with a lenticular papular eruption. The distribution of the groups and the grouping of the papules point in this direction. Further, it is known that a roseola macule is, histologically, not a macule, but that there is a distinct, though often slight, cell infiltration, and that this is always more marked around the follicles. Dr. Adamson states that he has seen, in several instances, the condition called roseola granulata evolve into definite patches of follicular papules. He quotes several cases illustrating the development of patches of follicular syphilide from macules of roseola.

He admits that the proof of the evolution of the small follicular syphilide from the roseola is not so clear as for the leucoderma and early circinate syphilides, but is of opinion that the facts mentioned in his paper strongly suggest that such is its origin.—WM. BARBOUR.

PATHOLOGY.

Prognostic Value of the Absence of the Fixation Reaction in Syphilitics. By A. Paris and G. Sabareanu (*Gazette des Hôpitaux*, 12th July, 1910).—Authors are practically unanimous that a positive Wassermann reaction, obtained, it is true, under certain conditions and in the absence of certain other diseases, is absolutely diagnostic of syphilis. It is admitted, on the other hand, that a negative reaction does not absolutely exclude the possibility of the patient having had syphilis at some previous period. The question then arises, in the case of those with a clearly syphilitic history,

whether such patients are to be considered cured, and protected against subsequent manifestations of the disease. On this point there is much difference of opinion. Citron and Lesser hold that the disappearance of the reaction after prolonged mercurial treatment indicates that the patient is cured. Wassermann, Koehne, Ledermann, Hoffmann, &c., say that while the reaction may disappear under treatment, it may return when the treatment is discontinued, and that the patient is then liable to further manifestations of the disease. Blaschko states that the reaction may disappear under treatment, and the lesions still persist. Kopp, on the other hand, records the cases of patients with well marked secondary and tertiary lesions in whom the reaction was negative; while Bruhns and Halberstaedter quote two cases with a negative reaction in whom, shortly thereafter, specific manifestations presented themselves. Gaston and Girault advise the continued treatment of all patients with suspicious lesions, even in the absence of complement deviation.

The authors of this paper base their observations on four cases of undoubted syphilis, in all of which mercurial treatment was commenced early, and continued for at least a year. In Case I treatment was commenced within four days of the chancre appearing. Three weeks later a roseolar rash appeared. A month later the patient presented no evidence of syphilis, and the serum reaction was negative, yet in less than four weeks ulceration of the tonsils and mucous patches had made their appearance. The remainder are cases of tertiary syphilis. In Case II a negative Wassermann reaction was followed, within two months, by the appearance of a papulo-crustaceous syphilide on the face. In Case III, although the serum reaction was negative, the patient had active gummatous lesions of the tongue and nasal septum. In Case IV a negative Wassermann reaction was followed in two months by ulceration of the nasal septum, and fixation and inequality of the pupils.

The authors formulate the following conclusions:—

1. A negative fixation-reaction in a case of secondary or tertiary syphilis, even when treatment has been thorough and prolonged, is of no prognostic value.
2. Even at the time the negative reaction is obtained the patient may be suffering with lesions in full activity, the seriousness and extent of which may be variable.
3. Absence of fixation-reaction does not indicate that the patient is protected from subsequent syphilitic manifestations: these may make their appearance very shortly after the blood has been examined.
4. A negative reaction in an old syphilitic does not even indicate that the virus is attenuated. Subsequent manifestations may appear in new situations, clearly showing fresh dissemination of the treponema.

—MATTHEW J. STEWART.

The Precipitation Reaction of Porges in Syphilis and Tabes. By L. Le Sourd and Ph. Pagniez (*Gazette des Hôpitaux*, 21st July, 1910).—The reaction suggested by Porges as a means of diagnosis in syphilis is a precipitation obtained by mixing, in equal parts, the patient's serum and a 1 per cent aqueous solution of glycocholate of soda.

The authors have collected the results obtained by ten observers. Of 535 cases of syphilis, 362, or 67·6 per cent, yielded a positive reaction; while of 484 non-syphilitic controls, 45 only, or 9·2 per cent, yielded a positive result.

The authors have investigated the reaction in the case of 32 tabetics, of whom 12, or 37·5 per cent, showed a positive result. This would seem to indicate that it is rare to obtain Porges' reaction in tabes, but it is pointed out that in the cases investigated the disease had been present for ten, fifteen, or twenty years. It seems probable that incipient and early cases would yield a considerably higher percentage of positive results. On this point further investigation is required.

The authors conclude that although Porges' reaction is not strictly specific,

it occurs with sufficient frequency in syphilis to render it of practical value, while, at the same time, it is easy of application. It is only in cases where Porges' reaction and clinical observation are at variance that recourse should be had to Wassermann's reaction, which, though undoubtedly more precise, is infinitely more complex, and is only of value when performed by one well versed in the technique.—MATTHEW J. STEWART.

On the Cutaneous Reaction for Gonorrhœal Infections.

By D. T. Watabiki, Professor of Bacteriology, Tokyo Charity Medical College (*Sei-i-Kwai Medical Journal*, 30th November, 1910).—Following the example of Bruck, Dr. Watabiki has endeavoured to obtain a cutaneous reaction in cases of gonorrhœa.

He makes two gonotoxins, viz., *A* and *B* preparations.

A preparation is made according to Chantemesse's method of preparing typhotoxin. Blood-agar culture of gonococcus is dried in a sulphuric acid desiccator. The dried preparation is taken and pounded in an agate mortar, emulsified in sterile water, and treated by the shaking apparatus for twenty-four to forty-eight hours. It is then centrifugalised. The clear supernatant fluid is poured off, and 1 part of this fluid is mixed with 10 parts of absolute alcohol to precipitate the gonotoxin. The gonotoxin is next dried in a desiccator and made into a 20 per cent watery solution.

B preparation is made according to the preparation of tuberculin. A three weeks' blood-serum-bouillon culture of gonococcus is killed by heating to 60° C. for one hour, and concentrated to one-tenth of the original volume and filtered.

Generally, the results may be summed up as follows:—

1. Acute and subacute urethritis are all negative with both preparations.
2. In chronic urethritis all cases were negative, with the exception of one positive with the *B* preparation and one doubtful with the *A* preparation.
3. In three cases of urethritis with endometritis, one was positive and two negative.

4. In cases of subacute and chronic arthritis all were positive to both preparations, the *A* reaction not being well marked.

Gonorrhœal arthritis as a general infection always gave a positive reaction, but gonorrhœal urethritis and other local infections always gave a negative reaction to both preparations. The question, therefore, arises why local infections do not react positively. Were the preparations of gonotoxin not suitable for the reaction?

They were made in the same manner as tuberculin and typhotoxin. If tuberculin and typhotoxin react positively to their respective infections, gonotoxin should also have reacted in the same manner, assuming the gonotoxin is reliable. However, as seen in the above results, the gonotoxin always gave a negative reaction, except in general infections. For this reason it seems that local infections do not produce antibodies, which are necessary for the reaction. If Wassermann's theory of anti-reaction is reliable, the question may be explained that the production of antibodies in gonorrhœa immunisation is positive in general infections; on the other hand, it is very weak, or not present at all, in local infections. Diagnosis of gonorrhœal infections by this reaction is not possible in local infections, but in general infections possible diagnosis may be made by the cutaneous reaction of gonotoxin.—D. ROSS KILPATRICK.

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- The Treatment of Syphilis by the Ehrlich-Hata Remedy (Dioxydiamidoarsenobenzol), A Compilation of the published Observations, by Dr. Johannes Bresler. Translated by Dr. M. D. Eder. Second edition, much enlarged. London: Rebman, Limited. (2s. 6d. net.)
- The Archaeological Survey of Nubia: Report for 1907-1908. Vol. I (with Plates accompanying Vol. I): Archaeological Report, by George A. Reisner. Cairo: National Printing Department. 1910. (£2.)
- Text-Book of Nervous Diseases, for Physicians and Students, by Professor H. Oppenheim, of Berlin. Fifth enlarged and improved edition. With 432 illustrations in the text and 8 plates. Authorised translation by Alexander Bruce, M.D., F.R.C.P.E., LL.D. Edinburgh: Otto Schulze & Co. 1911. (Two vols.)
- Meningitis, Sinus Thrombosis, and Abscess of the Brain, with Appendices on Lumbar Puncture and its Uses, and Diseases of the Nasal Accessory Sinuses, by John Wyllie, M.D. London: H. K. Lewis. 1911. (6s. 6d.)
- Diseases of the Anus, Rectum, and Sigmoid, for the use of Students and General Practitioners, by Samuel T. Earle, M.D. With 152 illustrations in the text. Philadelphia and London: J. B. Lippincott Company.
- The Bacillus of Long Life, a Manual of the Preparation and Souring of Milk for Dietary Purposes, by London M. Douglas, F.R.C.E. With many illustrations. London: T. C. & E. C. Jack. 1911.
- Diseases of the Spinal Cord (Oxford Medical Publications), by R. T. Williamson, M.D. Lond., F.R.C.P. With 183 illustrations and 7 plates. Second impression. London: Henry Frowde and Hodder & Stoughton. 1911. (15s. net.)
- Text-Book of Massage, by L. L. Despard. London: Henry Frowde and Hodder & Stoughton. 1911. (10s. 6d. net.)
- Horlick's Motor Maps: England—Scotland—Ireland. Horlick's Malted Milk Co.
- Handbook of the Surgery of the Kidneys, by W. Bruce Clarke, M.A., M.B. Oxon., F.R.C.S. With 5 plates and 50 illustrations in the text. London: Henry Frowde and Hodder & Stoughton. 1911.
- Surgery of Genito-Urinary Organs, by J. W. S. Gouley, M.D. London: Rebman, Limited. (8s. net.)
- Conferences on the Moral Philosophy of Medicine, prepared by J. W. S. Gouley, M.D. London: Rebman, Limited. (6s. net.)
- Essentials of Modern Electro-Therapeutics, an Elementary Text-Book on the Scientific Therapeutic Use of Electricity and Radiant Energy, by Frederick Finch Strong, M.D. London: Rebman, Limited. (4s. net.)
- Expansion of Races, by Charles Edward Woodruff, A.M., M.D. London: Rebman, Limited. (17s. net.)
- The Climatic Treatment of Children, by Frederick L. Wachenheim, M.D. London: Rebman, Limited. (6s. 6d. net.)
- Principles and Application of Local Treatment in Diseases of the Skin, by L. Duncan Bulkley, A.M., M.D. London: Rebman, Limited. (4s. 6d. net.)
- Handbook of Treatment for Diseases of the Eye (Ophthalmic Therapeutics), by Dr. Curt Adam, with a Preface by Prof. von Michel. Translated from the second German edition (1910) by William George Sym, M.D., F.R.C.S. Edin., and E. M. Lithgow, M.B., F.R.C.S. Edin. London: Rebman, Limited. 1911. (10s. net.)
- Cesare Lombroso, a Modern Man of Science, by Hans Kurella, M.D. Translated from the German by M. Eden Paul, M.D. London: Rebman, Limited. 1911. (4s. 6d. net.)

GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR
THE FOUR WEEKS ENDED 18TH FEBRUARY, 1911.

	WEEK ENDING			
	Jan. 28.	Feb. 4.	Feb. 11.	Feb. 18.
Mean temperature, . . .	44·9°	32·5°	37·5°	44·2°
Mean range of temperature between highest and lowest,	8·0°	9·3°	7·4	11·3°
Number of days on which rain fell,	5	1	1	7
Amount of rainfall, . ins.	0·70	0·02	0·02	3·05
Deaths registered, . . .	274	340	357	357
Death-rates,	15·9	19·8	20·8	20·8
Zymotic death-rates, . .	1·0	1·7	2·0	1·8
Pulmonary death-rates, .	4·4	6·0	5·9	7·0
DEATHS —				
Under 1 year,	48	54	70	67
60 years and upwards, .	75	77	91	86
DEATHS FROM—				
Small-pox, . . . . .	...	...	...	...
Measles, . . . . .	...	...	1	1
Scarlet fever,	4	5	3	...
Diphtheria,	2	4	4	4
Whooping-cough, . . .	5	16	24	26
{ Fever,	2	1	1	2
{ Cerebro-spinal fever, . .	2	2	...	...
Diarrhœa,	4	8	6	5
Croup and laryngitis, .	...	...	...	...
Bronchitis, pneumonia, and pleurisy,	54	73	83	97
CASES REPORTED—				
Small-pox, . . . . .	...	...	...	...
Cerebro-spinal meningitis, .	3	1	1	1
Diphtheria and membranous croup,	35	45	45	36
Erysipelas,	32	15	23	18
Scarlet fever,	83	82	72	61
Typhus fever, . . . . .	...	...	1	1
Enteric fever,	6	8	6	8
Phthisis,	58	57	47	59
Puerperal fever, . . .	2	2	4	3
Measles,*	19	18	37	55

* Measles not notifiable.

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ORIGINAL ARTICLES.

NOTE ON THE TREATMENT OF PHTHISIS PULMONALIS IN THE VICTORIA INFIRMARY.¹

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ABOUT twelve years ago the governors of the Victoria Infirmary permitted me to set aside a room, accommodating four beds, to be devoted to the treatment of women suffering from pulmonary phthisis. The patients admitted to this room are, as a rule, carefully selected—that is, they are examined by me and pronounced “suitable cases” for treatment before they can be taken in, and by suitable cases are meant those in which the disease is in an early stage, limited in distribution, and apparently not acute or rapid in its march. Those who know much of hospital work, however, will not misunderstand me when I say that even

¹ Being the substance of some remarks made at a demonstration to the Medico-Chirurgical Society of Glasgow in the Victoria Infirmary on 17th February, 1911.

with the best of intentions and the strictest supervision it is impossible to keep out patients who are not only unsuitable, but may even be in the final stage of the disease or actually moribund. For example, two patients last year were sent in to my general ward, one certified as gastric ulcer and the other as acute rheumatism: they were in the last stage of consumption, were too ill to be sent home, and had to be dealt with in the phthisical sideroom. I mention this just to show how difficult it is in hospital to keep to one's purpose to treat only "suitable cases."

Referring first of all to our *results*, I shall not to-night ask you to consider my entire statistics, but will mention only my experience during the past year. It may be explained that no case, however suggestive the physical signs, was accepted as phthisical unless tubercle bacilli were found in the sputum.

I find that during last year I had fifteen cases of pulmonary consumption under treatment, and of these I offer the following brief details, giving *results* only:—

1. Patient was four months with us; her temperature, at first typical of the disease, soon fell to the normal level and remained so. She put on 2 st. in weight, perspirations, cough, and expectoration ceased, and the physical signs were finally those only of a dry and non-spreading lesion when the patient was sent to the Bridge of Weir Sanatorium.

2. Patient was two months in the infirmary. She put on 8 lb. in weight, temperature soon fell to normal and sub-normal, and when patient was sent to Bridge of Weir Sanatorium she had no cough and absolutely no spit, and, as in last case, the physical signs remaining were those of a dry and shrinking lesion.

3. This patient was one of the "unsuitable" cases, admitted without examination. She had a pneumothorax when first seen; the pressure from this, on the other and sounder lung, embarrassed breathing so much that a portion of a rib was resected and the pleura opened on the affected side, the effect of this operation being complete and instant relief and comfort, which lasted till the patient died.

4. After six weeks' residence the patient went home with a steady and normal temperature, and an increase of weight amounting to 5 lb.

5. After eight weeks' treatment the patient returned to her home 1 st. and 6 lb. heavier than when she joined us: cough, spit, and perspirations had ceased, and her temperatures, which had originally been typically bad, had for many

weeks been steady and normal, and all râles and crepitations had disappeared.

6. This patient was with us two and a half months, and when sent to Bridge of Weir Sanatorium had gained 2 st. in weight, cough and spit were practically gone, and the temperatures, which at first had been of a bad type, became and remained normal. Physical signs, including those of cavity, persisted, but all *moist* sounds had disappeared.

7. The patient went home, for domestic reasons, after only two weeks' treatment. She had improved greatly in general condition, and had gained 1 lb. in weight.

8. After four weeks' treatment the patient went home "much improved," having gained 3 lb. in weight.

9. An "unsuitable" case. After three months' residence, during which the patient went steadily downhill, she went home, having lost about 2 st. in weight.

10. After three and a half months' treatment patient was sent to Bridge of Weir Sanatorium with a steady and normal range of temperature and a gain in weight of 19 lb. Six months later she called at the infirmary to show herself: she now weighed 16 lb. more, there were no râles to be heard anywhere, only a slightly defective expansion and somewhat duller percussion note on the affected side remaining as evidence of what had been.

11. This patient after nine weeks' treatment was sent to Bridge of Weir Sanatorium; she had put on 19 lb. in weight, her temperatures, which had been typically bad and tubercular in range, had been for weeks steady and normal or sub-normal, cough and expectoration had ceased, and the physical signs remaining were those of a limited and dry lesion.

12. After two and a half months' treatment this patient went home, having in that time lost 1 st. 4 lb. in weight, and in other respects gone downhill: another "unsuitable" case.

13. Sent to Bridge of Weir Sanatorium after three months' treatment, with a gain in weight of 6 lb. The temperature in this case had been practically normal all through: there was absolutely no cough and no expectoration when she left us, and physical signs in the chest were almost undetectable.

14. This patient was sent to Bridge of Weir Sanatorium after ten weeks' hospital treatment, with a gain in weight of 5 lb. Her temperatures even on admission had not been very high, and they soon fell to a normal level and remained so. When

dismissed, her cough and spit had absolutely ceased, and the physical signs, including those indicating a large cavity, were universally dry and free from râles.

15. A quite "unsuitable" case for hopeful treatment: died after two weeks' residence.

To these cases may be added that of the patient I now show you. She was admitted here on 6th October, 1906, four years and four months ago; she remained with us for two months, when she was sent to Bridge of Weir Sanatorium, having put on 16 lb. in weight. The disease was limited to left apex, front and back, where crepitations and other typical physical signs were present: spit was copious, tenacious, mucopurulent, and contained tubercle bacilli in abundance. Temperatures, however, had never run very high. She stayed four months in the sanatorium, afterwards going home, where she continued in good health till November, 1907, when she was admitted to this infirmary for the second time. Some degree of cough had returned: expectoration, however, was now only mucous in character, and contained tubercle bacilli in very small numbers. There was no perspiration, no loss of flesh, and only a few crepitations could be heard at the left apex in front. She went home in a month, feeling quite well, with a gain of 6 lb. in weight. A few days ago—that is, four years and four months after her first visit—she presented herself here for examination, fearful lest the recent fogs might have stirred up her trouble. Physical examination revealed no moist sounds, giving evidence only of a marked retraction of the part of the lung originally involved. Expectoration was obtained with difficulty: on careful examination no trace of tubercle bacilli could be found.

Such, then, putting it shortly, is our experience of the treatment of pulmonary phthisis in our small ward, and considering the social surroundings of most of our patients it is an experience with which we may well be satisfied.

It remains now to discuss the line of treatment followed, and this in the main was a modified sanatorium treatment carried on as thoroughly as possible in an urban (or suburban) hospital. The room in which the four patients lived had a cubic capacity of 5,200 feet, giving 1,300 cubic feet to each patient. The room has two large windows, which are kept widely open day and night, save in dense fogs and high gales, a brisk fire being kept burning in it in cold weather: the

ventilation of the room is thus simple but ample, and is cut off from the general ventilation of the house, which is on the well-known Plenum system. Patients are kept strictly in bed while their temperatures are above normal: when these become normal and steady the patients are permitted to go about the wards or take exercise in the grounds in favourable weather. Diet is not specialised to any great extent, and stuffing tactics are certainly not adopted. The one dietetic point most insisted on is the giving of *raw meat*, usually finely scraped or very finely minced (put three times through an ordinary mincer), in quantities varying from 4 to 8 or even 12 oz. per day, according to the patient's ability to take it. Raw meat, in my experience, is very easily digested, and there is in it the minimum of waste; those of my phthisical patients who have shown most improvement have invariably been those who took the raw meat most freely. Some patients take it easily raw and undisguised: to others it may be given in thin bread sandwiches, duly peppered and salted or mixed with an equal quantity of red currant jelly. As a soup it may be given stirred up in warm or lukewarm stock, with pepper and salt, and a little tomato ketchup added as a flavouring agent. The diet list also includes plenty of milk and eggs, and when necessary stimulants.

As regards active medicinal treatment, we adopt the following routine:—

1. Thrice daily the administration after food of a table-spoonful of a 50 per cent emulsion of cod liver oil, each dose containing 10 gr. of glycero-phosphates and 10 minims of pure guaiacol.

2. An inhalation or spray of cyllin.

3. A daily injection (subcutaneous) of a "Pravaz-syringe-ful," that is, 15 to 20 minims. of sterile almond oil containing in solution 4 per cent each of iodoform and guaiacol.

This I consider a most important and effective element in our system of treatment. It is easily carried out, any intelligent nurse being able to administer the dose: it has never, in many thousand injections given here, caused pain or discomfort, induration or suppuration, always provided it is thrown into the subcutaneous tissues and not into the derma or true skin: it speedily saturates the system with the antiseptics it holds in solution, acts as an excellent expectorant, and deodorises the sputum if this has an offensive odour.

4. To control irritative or superfluous cough, that is, cough not required for the expulsion of sputum, the following mixture is used:—

R. - Ac. hydrocyan. dil.,	48 minims.
Morph. acetat.,	4 grs.
Syr. aurant., ad.	2 oz.

Sig.—A teaspoonful to be slowly swallowed, undiluted, at bedtime.

This, then, outlines the routine treatment we have gradually adopted in this infirmary, modified, of course, in individual cases as symptoms seemed to demand. It may be observed that the patients referred to in the earlier part of this note were dealt with strictly according to this routine.

Quite recently, within the last three months, we have modified the medicinal treatment of pulmonary phthisis by the adoption of intravenous instead of subcutaneous injection of germicidal substances, the drugs used being solutions of formaldehyde and chinisol. In this way a more determined attempt is made to fulfil the two guiding precepts followed in dealing with all tubercular or other diseased conditions caused by pathogenic germs, namely, (1) to make the body a soil unsuitable for the development of the germ concerned, and (2) to attack and as far as possible to destroy the pathogenic organism without at the same time injuring the host, the patient. And in this connection I have to acknowledge gratefully the help and guidance obtained from Dr. J. McElroy, of Belfast, an old student in this infirmary, whose article in the *Lancet* of 18th November, 1910, first turned my thoughts definitely in the direction of intravenous medication in this disease.

The standard solutions used are two, 1 to 200 of formaldehyde and 1 to 200 of chinisol, the former being made by mixing 1 of water with 80 of formalin, which contains 40 per cent of formaldehyde.

The technique of administration is governed by two facts—first, as both agents employed are not only germicides, but are also rather active irritants, the doses given intravenously must be very dilute and therefore large in volume, about 60 c.c. too large for a hypodermic syringe or even a serum syringe; and, secondly, as the needle used must of necessity be slender and of fine calibre, a fine hypodermic needle in fact, it is hopeless to expect the solution to enter the vein by gravitation or ordinary atmospheric pressure, so that

mechanical pressure has to be employed, hence the need for rather complicated apparatus.

The apparatus consists of a burette, holding from 60 to 100 c.c., supported on a stand in the usual way: its upper end is closed by a rubber stopper pierced by an arching piece of glass tubing, to the outer end of which an ordinary spray bellows is attached: to its lower end is fixed a short length of rubber tubing, into the extremity of which the butt of the needle is introduced, the flow through this tubing being controlled either by a pinching stopper or a stopcock in the burette.

In giving an injection the burette is first of all filled with hot normal saline solution: this heats the burette, and also serves another purpose to be noted later on. The patient's veins at the bend of the elbow must then be distended by applying a rubber tourniquet (the rubber tubing supplied for infants' feeding bottles answers very well) round the upper arm, and if necessary another similar piece of tubing may be put round the fore-arm after firm stroking or rubbing of the fore-arm in an upward direction. Nearly the whole of the warm saline solution is now run off from the burette, and the stopcock turned. Then, after sterilising the skin, the needle is introduced into the vein: and when it is quite certain that the needle is really in the vein selected, the dose, previously measured, is poured into the burette, the stopper inserted, and pressure applied with the bellows till the fluid has been discharged into the vein. On withdrawing the needle the application of a fold of sterile gauze and a gauze bandage is all that is needed.

The dosage of the medicaments is managed thus:—For the first injection 6 c.c. of the formaldehyde solution are mixed with sterile cold water to make 30 c.c.: to this are added other 30 c.c. of boiling water, making 60 c.c. in all, and this quantity is passed into the burette. It mixes quite well with the small quantity of normal saline remaining in the burette. For second dose, give 6 c.c. of formaldehyde solution and 3 c.c. of chinosol solution, made up as before to 30 c.c. with sterile cold water and then to 60 c.c. with boiling water. For third dose, 6 c.c. formaldehyde with 4 c.c. chinosol: then 6 formaldehyde and 5 chinosol: 6 formaldehyde and 6 chinosol: 7 formaldehyde and 7 chinosol: and so on, increasing gradually the daily dose till 15 c.c. of each is reached, when the injections should be given every other day and the standard solutions doubled in strength—that is, made 1 to 100. The course of treatment may extend to thirty

injections, the dose ultimately reaching 12 c.c. of the 1 to 100 solutions of each, when a pause may well be made, and the results of the treatment estimated, before embarking on a further course.

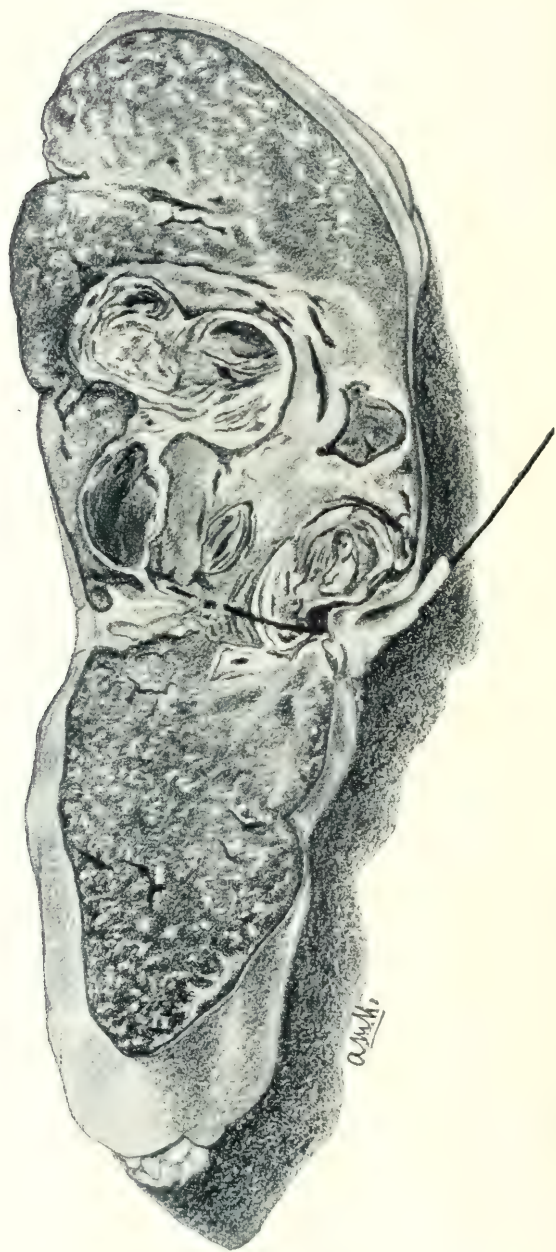
Patients submitted to this line of treatment must have *good superficial veins*—that is, veins that stand out well so as to be easily and certainly reached with the needle: and this, odd as it may appear, may in early cases, in which the patients are still plump, present a quite insurmountable obstacle to *daily* intravenous injection.

It is often rather difficult to hit even a prominent vein; unless the needle is slender and sharp the vein is pushed aside and the fluid is sent into the tissues round it. And it is here that the normal saline solution, tried before the dose is poured into the burette, proves so valuable: if the point of the needle is not really in the vein the presence of a few drops of saline solution in the tissues (indicated by a small swelling at the seat of puncture) causes no trouble, while a similar quantity of the formaldehyde and chinosol solution gives rise to an intolerable degree of pain and irritation. When the fluid enters the vein sweetly and easily practically no pain or discomfort is experienced, particularly if the median-basilic vein is chosen: for some reason or another, there is more discomfort when the median-cephalic is chosen.

It is impossible for me, with a limited experience of this method, to say much as to its effects: but Dr McElroy¹ seems to have obtained results which are at anyrate encouraging. I have had six cases under this line of treatment, and all seem to have benefited from it, while no untoward effects have been observed. The point which has struck me most is the amount of freedom one may take in intravenous medication with apparently no risk or even discomfort.

The one patient in whom I have carried out this treatment most thoroughly is a medical brother in active practice, and the effects in his case are an increase in weight (4 lb.), and a marked diminution in cough and expectoration, the latter being lessened to a fourth of its former quantity and altered in quality from pus and mucopus to an almost purely mucous character. Tubercle bacilli were at first numerous in the sputum; within a fortnight they had diminished in numbers and markedly altered in appearance, becoming thin and thread-like with clubbed and deeply-stained extremities. In each of the last two films, examined carefully on a mechanical stage, only *three* tubercle bacilli were found.

¹ *Loc. cit.*



Section of the spleen showing the branch of the splenic artery with a bristle passed through it into the cavity of one of the aneurysms which is collapsed. Also the masses of laminated thrombus in the aneurysms.

TWO CASES OF ANEURYSM OF THE SPLENIC ARTERY.¹

(*From the Pathology Department of Glasgow Royal Infirmary.*)

By R. S. TAYLOR, M.B., CH.B.,

AND

JOHN H. TEACHER, M.D.

THE following cases are reported on account of their rarity as pathological conditions and the clinical features which they presented.

The first is a case of infective aneurysm occurring within the substance of the spleen in a boy of 14, who suffered from ulcerative endocarditis. The condition is extremely rare; indeed, we have been unable to trace any record of a similar case.

In the second, the pathological condition is less rare. Aneurysmal dilatation of the trunk of the splenic artery is, in a sense, only an exaggeration of the tortuosity and irregularity which is very common; but in the present case the occurrence of thrombosis had results of much interest both clinically and pathologically.

CASE I.—Male, æt. 14 years, was admitted to the Royal Infirmary on 9th March, 1910. Seven years previously he had an attack of acute rheumatism and was ill for about eight weeks. The parents knew nothing at that time of any cardiac involvement, and the recovery appeared to be complete. He had a second, but less severe, attack seven months before admission—the feet, ankles, and knees being mainly affected. This attack lasted for about four weeks, and again he seemed to be quite well, but three months before admission he began to have irregular pains in various joints, and severe paroxysms of pain in the præcordial area. The paroxysms lasted for a few seconds only, but occurred very frequently and seemed to cause very acute suffering. This continued until admission, but he had no further severe pain during residence.

¹ Read at a meeting of the Glasgow Medico-Chirurgical Society held on 21st October, 1910. A large globular aneurysm of the splenic artery from the Museum of the Glasgow Royal Infirmary was also shown.

On admission to hospital, he was noted as being a puny, undersized boy: pale, and evidently having undergone rapid emaciation. He was able to lie down comfortably in bed. There was a purpuric eruption over the trunk. Arterial pulsation was visible in the vessels of the neck, and capillary pulsation was easily demonstrated.

The cardiac rhythm was regular, but the force of the systole varied somewhat. A systolic thrill could be felt over the apex of the heart.

The cardiac area was a little enlarged in all directions, but principally towards the left. Mitral systolic and double aortic murmurs were made out. Liver and spleen could be felt beneath the costal margin, but the spleen was excessively tender, and even the gentlest palpation could scarcely be borne. Urine contained much albumen, with granular and hyaline casts.

Throughout the night of 12th March he was very restless and complained of severe headache, and between 2 A.M. and 10 A.M. on 13th he had six short convulsive seizures, during each of which there was internal strabismus, tonic spasm of all the limbs, and loss of consciousness.

From 13th March he appeared to be making slow progress, until 2nd April, when he had another convulsive seizure in which he died.

Throughout residence his temperature ranged between 98° and 101°, the rise being in the evening, and only once did it reach 102·4°. Pulse ranged between 96 and 112 per minute. For thirty-six hours before death, the temperature ranged between 102° and 103°, and pulse 140 to 150.

Abstract from Post-mortem Journal: External.—The body was that of a greatly emaciated boy. There was considerable lividity of the lips and a slight general anasarca. No purpuric spots were visible.

Thorax.—The serous sacs were healthy. Lungs showed chronic venous congestion and were very oedematous.

Heart.—Both ventricles showed considerable hypertrophy and dilatation, with good healthy muscular wall. The aortic valves were incompetent. Large shaggy masses of vegetations in process of breaking down were present on all three aortic cusps. There was some old-standing thickening of the aortic and mitral valves, but no adhesion of the cusps. There was some thickening of the endocardium, extending down for nearly an inch from the aortic opening, and over this and the ventricular surface of the anterior mitral cusp were numerous

recent vegetations. There was a ring of recent small vegetations on the lines of contact of the mitral valves. The pulmonic and tricuspid valves were healthy. There was a small aneurysmal dilatation at the commencement of the aorta, involving the orifice of the right coronary artery.

Abdomen.—The liver and kidneys showed the changes associated with chronic venous congestion. The spleen was greatly enlarged, with deep puckering of the surface and some perisplenitis. Half of the spleen was examined at once, and the remainder preserved for further investigation. The puckerings on the surface were cicatrices resulting from old infarctions. There was also a large recent hæmorrhagic infarction.

The portion of spleen examined contained several large masses of laminated thrombus, enclosed in cavities with definite smooth walls, and the cavities communicated with one another.

There were a number of enlarged caseous mesenteric glands, but neither ulcers nor tubercles could be found in the bowel. The mediastinal glands were also slightly enlarged, but not caseous.

Brain.—There was a little hæmorrhage into the pia-arachnoid over the right parietal region, and the whole right hemisphere showed very considerable bulging. In the bifurcations of almost all the smaller vessels at the base there were loose plugs, corresponding in macroscopical characters to the vegetations on the aortic valves. There was a small area of softening in the left frontal lobe. There was a very large hæmorrhage into the right cerebral hemisphere which had ploughed up the brain substance so much that its source could not be traced.

Films made from the spleen by direct smear showed large endothelial cells in various stages of disintegration, and a few polymorphonuclear leucocytes, but no organisms. Sections of the cardiac valves were also stained for organisms, with negative result.

The remainder of the spleen (see illustration) after preservation showed one large mass and several smaller masses of thrombus—the larger ones being laminated—apparently enclosed in dilated vessels. The large mass is clearly an aneurysm, and is related to the one remaining branch of the splenic artery, which remains at the hilus. This branch is about one-twelfth of an inch in diameter, and enters the spleen close to the large aneurysm, into which it passes directly. For about the last quarter of an inch of its course,

just before it is lost in the large aneurysm, the vessel is slightly tortuous, and shows a very marked dilatation of its lumen. The large aneurysm extends along under the capsule for rather more than an inch, and ends in the cicatrix of an old infarction.

There is further a medium-sized mass of thrombus adjacent to the large mass which can be traced, gradually increasing in size, right through this half of the spleen. It occupies a large globular dilatation lying close beneath the capsule. Along its course it gives off several smaller branches, which were made out to be greatly dilated branches of the splenic artery filled with soft red thrombus. It appears to represent another, possibly the main, branch of the splenic artery.

Portions of the lining walls of the cavities, taken from different situations, were submitted to microscopical examination.

For the most part, the wall is composed of a definitely laminated structure, and this at first was taken to be the remnant of an altered and greatly distended arterial wall. At no part could any endothelial lining be found, and in sections stained by Weigert's method no elastic tissue could be demonstrated. Most probably, therefore, the wall was composed of the compressed and altered splenic tissue. Several sections showed a gradual transition from thrombus through the laminated structure of the wall, becoming more and more cellular until the ordinary appearance of the spleen was reached. The membranous wall consists of spindle-shaped cells with elongated nuclei lying with their long axis around the cavity. In some parts this is very dense, and the cells seem drawn out and closely packed together. The majority of the sections, however, show a more loose arrangement of the spindle-shaped cells, with varying degrees of round celled infiltration. The transition to splenic tissue is, in most instances, quite clear, the spindle cells losing their definite arrangement and outline, and giving the appearance of their having been derived from the stroma of the spleen. In a few situations the thrombus abuts on splenic tissue, which shows much less alteration and could still be recognised as spleen, but these parts also show a very definite circular arrangement of stroma and cells suggesting pressure.

The etiology of the aneurysms can only be a matter of conjecture. The spleen itself showed the changes typical of chronic venous congestion. There was no evidence either in the spleen itself or in the walls of the cavities of any

recent acute inflammatory condition, only a few polymorphonuclear leucocytes being seen.

The most feasible explanation, however, especially in a case of ulcerative endocarditis, is that their origin was inflammatory in nature. It is impossible to decide whether they were originated by infective emboli of the larger arterial branches or by organisms circulating in the blood and lodging in the spleen, there giving rise to a peri-arterial inflammatory condition such as has been described by Rolland in a case of aneurysm of the hepatic artery. The cicatrices of old infarcts go to prove the existence of fair sized emboli, and the reasonable presumption is that this has been the primary condition.

The small aneurysmal pouch at the commencement of the aorta did not show much change in the wall. The tunica media was a little thinner than elsewhere, and there was slight increase of fibrous tissue, but no sign of any active inflammation. This condition involving the orifice of the right coronary artery is interesting as an explanation of the severe paroxysms of cardiac pain.

No other vascular changes were found in any part of the body, but it is more than likely that the cerebral hæmorrhage resulted from rupture of an aneurysm, due in all probability to an infective embolism.

CASE II.—Female, æt. 43 years, was admitted to the Royal Infirmary on 3rd March, 1910. Her illness dated from twelve days previously, when she experienced a feeling of discomfort in the left hypochondriac region, but according to the history obtainable nothing definite was made out, and there was no fulness and no rigidity. The discomfort increased to actual pain, which she had almost continuously until admission. She was very constipated at first, but after taking purgative medicine she rather suffered from diarrhoea. The character of the stools does not seem to have been noted. She became much worse on the day before admission, and vomited continuously, the vomitus being green coloured. Her pain was now severe, and there was slight distension of the abdomen, with rigidity of muscles above and to the left of the umbilicus.

On admission she was very collapsed, with small, rapid pulse, eyes sunken, and features pinched. She was noted as being rather cachectic, and of a lemon yellow colour. There was practically no rigidity nor distension of the abdomen, but there was a good deal of pain and tenderness in the epigastric

and left hypochondriac regions. Hepatic dulness was not diminished. She was vomiting continuously, and the vomitus, besides being stercoraceous in character, contained altered blood.

She died two days later. There was no hepatic dulness on the day of her death. Her temperature ranged between 98·4° and 102°, the remission being in the evening. Two Widal's tests were performed before admission, on days reckoned to be seventh and fourteenth of illness, with negative result, but after admission to hospital a third examination in the sanitary office of the city of Glasgow was positive, and the case was notified as enteric fever prior to the *post-mortem* examination.

Abstract from Post-mortem Journal: External.—The body was that of a fairly well-nourished woman. There were no external markings.

Thorax.—Heart was small; valves were competent and healthy. Muscular wall was rather soft, and the fibres tended to separate. Aorta was practically healthy, and free from thrombi. Lungs were cedematous. The left was slightly adherent at the apex. The right was adherent all over, and very densely so at the base, where a new fibrous tissue formation enclosed a cavity, about the size of a golf ball, filled with pure white creamy substance.

Abdomen.—Almost the whole of the first half of the jejunum was intensely congested, and contained numerous small hæmorrhages. The first two coils (about 3 feet) were actually gangrenous. The bowel wall, except the gangrenous part, and mesentery were firm and considerably thickened. The affected coils of intestine were sealed together by recent fibrinous exudation, but otherwise there was no sign of peritonitis.

The stomach was apparently normal, and the duodenum was also normal looking for the first two-thirds of its length. Beyond that it was congested, but the real infarction of the intestine began beyond the termination of the duodenum.

The main trunk of the portal vein was distended with rather dense thrombus, which passed far into its branches in the liver and down the mesenteric veins to the intestine. The cæcum and ileum showed no lesion of their walls and no sign of enteric ulceration, but their contents were blood-stained. There was thrombus lying loosely in the veins returning from the cæcum. The main trunk of the celiac axis and the

hepatic artery were clear, but the splenic artery from immediately beyond its origin was thrombosed.

Spleen.—There was a large anæmic infarct occupying fully half of the organ. This was well defined at its margins, and very soft internally. It was of fairly recent origin, but definitely an older lesion than that of the intestines. The spleen was adherent to a much prolonged left lobe of the liver. The rest of the spleen showed rather full congested pulp.

Liver was pale, anæmic, and rather fatty.

Kidneys showed advanced cloudy swelling.

The only thrombi in the heart were agonal clots in the right side.

On further dissection, a remarkable condition of the splenic artery was made out. It followed a course to the spleen which was even more tortuous than normal, and it was distended with thrombus and showed globular dilatations which made it look like a thrombosed varicose vein. These were clearly shown by dissection to be aneurysmal dilatations of the artery.

The first of them—about half an inch in diameter—was situated about 3 inches from the origin of the vessel, and there were three others of irregular sacculated form, situated close to the hilus of the spleen.

The vessels entering the spleen were of the usual size. Most of them were occupied by red thrombus of varying density. The vessel at the apex of the large infarction contained a very firm grey plug. The aneurysms contained firm red thrombus, with little indication of a laminated structure.

Microscopical examination was made of sections, including several undilated arterial twigs at the hilus of the spleen and of portions of two of the aneurysms. The undilated twigs appear to have thickened walls, with a certain amount of endarteritis and fibrous changes in the middle coat. The walls of the aneurysms are fairly thick and very fibrous, with a certain amount of round cells principally replacing the middle coat. The internal elastic lamina is not recognisable, and it would be scarcely possible to tell that they were of arterial origin apart from the dissection.

As to the course of events, only suggestions can be made. It seems probable that the aneurysms had long been in existence, and from the history it also seems probable that the occurrence of the large infarction corresponded with the onset of symptoms. This may have been due to embolism, in

which case the embolus probably came from a thrombosis in one of the aneurysms; or it may have been due to direct occlusion of the arterial branch by thrombosis in an aneurysm.

The thrombosis gradually spread back to the commencement of the splenic artery, where it was arrested. About the same time thrombosis occurred in the splenic vein, which, however, extended into the main portal trunk, producing the thrombosis of the entire portal system, and giving rise to infarction of the intestine.

We are indebted to Dr. George S. Middleton for the clinical history of the first case, and to Mr. J. Hogarth Pringle for that of the second case, and for their kind permission to use their records.

REFERENCE.

W. Rolland, *Aneurism of the Hepatic Artery* (with review of literature), *Glasgow Medical Journal*, May, 1908.

ADDITIONAL NOTES ON THE TREATMENT OF SCIATICA BY MEANS OF SALINE INJECTIONS.¹

By ARCHIBALD G. HAY, M.A., M.D.,

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AS Chairman of the Division I was asked to read a paper at this your first meeting for the year 1910-11, and it occurred to me that, as I had read before the Division a paper on the treatment of sciatica by means of saline injections over three years ago,¹ my later experience of that method of treatment might prove interesting. In that paper I reported four cases of severe sciatica, all of which were cured. The ten cases which I have now to report do not show the same uniformly successful result, and are for that reason worth reporting.

Of the ten cases diagnosed sciatica, two turned out not to be sciatica, leaving eight cases of the disease. Of these eight,

¹ Read before the North-Western Division of the Glasgow and West of Scotland Branch of the British Medical Association on 8th November, 1910.

¹ *Glasgow Medical Journal*, May, 1907.

four were cured, two showed improvement but were then lost sight of, one received one injection and did not return for further treatment, and one, after slight improvement, became definitely worse and treatment was discontinued. I shall now read brief notes of each case, beginning with the cures and keeping the wrongly diagnosed cases to the last.

CASE I (Dr. McClure).—H. B., 48, male, labourer, was seen on 8th April, 1907. Five weeks ago he felt a sudden pain in his back, shooting down the back of the right leg to the knee. He says it does not hurt when he walks, but that when he stoops it is very painful. Pressure over the sciatic foramen, and to a lesser degree over the middle of the gluteal fold, elicits the pain. Rectal examination negative.

11th April.—Ten c.c. saline solution injected at the foramen. On rising from the couch patient said that he felt easier, and found that he could stoop without feeling pain.

13th April.—Condition improved since last seen, but still some pain on lifting weights; 10 c.c. injected.

7th May.—Written to yesterday as he has not appeared since date of last note: replies, &c., ". . . had to go back to work . . . the trouble is almost all away: wearing away gradually; very thankful to you." . . .

CASE II (Dr. Lindsay Steven).—Margaret C., 34, housewife, was admitted to Ward II of the Western Infirmary under the late Dr. Lindsay Steven on 6th August, 1907, with right sciatica of ten weeks' duration. On 19th September, as medicinal treatment and counter-irritation gave no relief, Dr. Lindsay Steven asked me to see her. I found the right knee-jerk increased, sensation of pins and needles in the leg, and great tenderness to pressure along the course of the nerve. She was unable to stand without support on account of the pain, and could rest no weight on the affected limb; 10 c.c. saline solution injected.

I extract the following notes from the Journal of Ward II: "*29th September, 1907.*—Since the above date (19th September, 1907) Dr. Hay has given three injections of saline solution with three days' interval between each. The patient thinks that the pain is distinctly less, and the whole nerve is much less tender to the touch.

"*5th October.*—Dr. Dykes (house physician) has given two saline injections into the nerve.

"*13th October.*—One saline injection by Dr. Granger (house physician) on 9th October.

"17th October.—She can walk now with only a very slight limp, but has a certain amount of pain when she walks. She was dismissed to-day."

4th November.—Seen to-day: reports herself free from pain, slight stiffness only, and pins and needles over dorsum of foot; walks with ease.

CASE III (Dr. McClure).—T. L., 41, barman.

10th December, 1907.—Six years ago had an attack of sciatica in right leg, which laid him up for five months. Early last spring the left leg became affected, but got better when summer came. For the last six weeks he has been confined to bed with pain along the course of the nerve and numbness in the peroneal area. There is some tenderness over the calf muscles, and this, with distinct tremor of the hands and the man's occupation, gives rise to a suspicion of the existence of alcoholic neuritis: 10 c.c. injected into the sciatic nerve, causing considerable pain at the time.

12th December.—Reports diminution of pain in gluteal region, but no improvement over the peroneal area: 10 c.c. injected.

14th December.—Reports condition unchanged: 10 c.c. injected at the gluteal fold.

17th December.—Condition unchanged: 10 c.c. injected at foramen.

23rd December.—Reports diminution of pain both in hips and in leg; 10 c.c. injected at foramen.

6th January, 1908.—Reports pain in left hip gone, diminished in left leg, some aching in right hip: A.B.C. liniment prescribed.

CASE IV (Professor Samson Gemmell).—H. K., 60, labourer, was admitted to Ward XXXI of the Western Infirmary on 13th June, 1910, complaining of very severe pain at the back of the right hip and thigh of a week's duration. On the 15th a fly blister was applied with beneficial results, but he still suffered severely and could not sit up or turn himself in bed.

On 21st I was asked by Professor Gemmell to see the case, and injected 10 c.c. saline into the right sciatic nerve at the foramen.

23rd June.—Reports great relief: 10 c.c. injected.

25th June.—Expresses himself as quite free from pain and able to move freely.

29th June.—Dismissed from the ward as cured.

CASE V.—A. M., 48, music teacher, was seen on 15th September, 1908, complaining of pain in left hip of eighteen months' standing. After four injections the pain was slightly alleviated but still present. Did not return for further treatment.

CASE VI.—J. C., 22, miner, on 22nd May, 1908, was seen, with sciatic pain of twelve months' standing. Had one injection and did not return for further treatment.

CASE VII.—J. H., 40, pipelayer, was seen on 12th May, 1908, with severe pain in right leg of ten weeks' duration.

14th May.—Ten c.c. injected over foramen, causing considerable pain, followed by a feeling of distinct improvement.

18th May.—Reports that he is now able to stand upright, but that the pain has been constant since the injection; aspirin prescribed.

22nd May.—Pain rather less; 10 c.c. injected.

26th May.—No improvement; pyramidon prescribed.

28th May.—Reports that the pain is so bad that he is unable to leave his bed.

CASE VIII (Dr. Charteris).—J. G., 52, enginedriver, was seen on 14th March, 1907, after a fortnight's treatment with salicylate of soda and iodide of potassium. Three months ago he began to have pain in the left hip, shooting down the leg, aggravated by stooping, and gradually becoming more severe until he was obliged to give up work. The pain is worse at night, so that he gets very little sleep. He suffered from Bright's disease nine years ago.

Rectal examination reveals an enlarged dense prostate, with prominent left lobe; 10 c.c. injected.

16th March, 1907.—Reports no improvement; 10 c.c. injected.

11th April.—Has not reported himself since 16th March.

• The two following cases were wrongly diagnosed:—

CASE IX (Dr. McClure).—T. T., 50, car-cleaner, was seen on 28th February, 1907. Four months ago began to suffer from pain in left hip, which shot down into the leg and foot, with a feeling of "pins and needles" on outer side of lower third of leg and sole of foot: this "pins and needles" sensation frequently woke him up from sleep.

1st March, 1907.—Ten c.c. injected.

5th March.—Patient reports that he felt better on the day

of the injection, but since then has returned to his former condition; 10 c.c. injected.

9th March.—No improvement. Papation reveals increased resistance in the left iliac fossa, when firm pressure causes pain to shoot down the course of the sciatic nerve to the calf. On rectal examination a smooth, ill-defined swelling is felt high up on the left side, pressure on which causes pain over the same area. Patient was sent back to Dr. McClure, who recommended him for admission to hospital. He did not return when written to and has been lost sight of, so that the nature of the swelling is unknown. It seems clear, however, that the sciatic pain was due to it.

CASE X.—J. S., 45, medical missionary, was seen on 9th May, 1907, complaining of pain along the whole course of the right sciatic nerve from the foramen to the dorsum of the foot. He has suffered from lumbago for a long time. Three months ago, on his way home from China, he fell down a companion-ladder, landing on his right buttock, and since then has had pain along the course of the sciatic nerve. This pain has been much worse during the last three weeks, and has been associated with partial anæsthesia over the anterior part of the sole of the foot, dorsal surface of the toes, and peroneal aspect of the leg. He has had great pain at night, and has taken morphia to obtain sleep.

10th May, 1907.—Ten c.c. injected, but the needle missed the nerve.

11th May.—No improvement: had a very bad night; 10 c.c. injected, again missing the nerve: aspirin (10 grs.) every four hours prescribed.

13th May.—Reports some improvement since last injection, and that the aspirin gave him three hours of complete relief from pain on the night of the 11th. The pain is now as bad as ever; 10 c.c. injected into the nerve, the injection giving rise to a sensation as of a large body of water flowing down the leg to the foot.

14th May.—Last night was the worst he has ever experienced. Further enquiry into his history elicits the fact that he had had many attacks of malarial fever in China, and several since his return home. He had one last night. Injections stopped.

October.—Reports that since May he had been taking large doses of salicylate of quinine, and was very much improved.

It seems to me that the neuritis in this case was malarial, excited by the injury received on board ship.

If to the ten cases here narrated we add the four previously reported and subtract the cases of pelvic tumour and malaria, we find that of twelve cases treated eight were cured, one was made worse, and three were lost sight of.

With regard to the technique of the injection, I now inject at the sciatic foramen or at the gluteal fold, according as pressure causes greater pain at the one point or the other. To find the foramen, I draw imaginary straight lines from the posterior superior iliac spine to the tip of the great trochanter and to the middle of the ischial tuberosity, bisect the angle contained by these lines, and measure $2\frac{1}{2}$ inches along the bisecting line. At the gluteal fold the nerve lies midway between the trochanter and the tuberosity. To ascertain whether the needle has penetrated into the nerve, I press the plunger of the syringe gently so as to expel a few drops of the solution. If the needle is in the nerve the patient experiences a sensation as if something were trickling down within the leg to a variable distance, sometimes only to the middle of the thigh, sometimes as far as the heel.

In evidence of the permanence of the cure, I show you to-night a man whom I injected eleven years ago. He is a road-mender, and his face is probably familiar to some of you. For several years before he was treated, he was confined to the house with sciatica every winter for periods varying from a few days to many weeks. Since he was treated he tells me he has never lost a day's work. His case is of interest for another reason. Lange, of Leipsig, was the first to publish the results of saline injections of sciatica,¹ and is therefore justly entitled to claim priority. His first case was injected in July, 1902, that is, two and a half years after a case had been successfully treated in Glasgow.

¹ *Münch. med. Woch.*, 27th December, 1904.

THE PROTEIN REQUIREMENTS OF THE BODY.

By E. P. CATHCART, M.D., D.Sc.,
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THE question as to whether a large intake of protein in our food is necessary is not yet definitely settled. A few years ago, as the result of the experiments of C. Voit and his school, no doubt existed as to the advisability, if not even the necessity, of having some 120 grms. of protein in the daily food of an average man doing average work. Other workers, it is true, had shown that the physiological minimum lay much lower than this, as Siven, for instance, demonstrated on his own person that it was possible to live for a week, at least, on a daily protein intake of about 15 to 20 grms. Then came the work of Chittenden, where it was laid down that if health was to be maintained a lower intake of protein than 120 grms. was advisable. Chittenden recommended as the standard intake a quantity of about 60 grms. per diem. In the following short paper I wish to put forward some of the more recent investigations on this subject of protein metabolism.

It is now a fact generally admitted by physiologists that no longer is one justified in assessing the value of a diet simply on its content of protein, carbohydrate, and fat, or on its caloric value. It is admitted, for example, that there may be substances in the food which play no part in the energy change, yet are absolutely essential for the wellbeing of the animal. Hopkins, for instance, as the result of his feeding experiments with zein (the protein of maize) came to the conclusion that an amino acid like tryptophane might be utilised without directly contributing to tissue formation or structural maintenance "if it serves as a basis for the elaboration of a substance absolutely necessary for life—something, for instance, of an importance equal to that of adrenaline." Folin, too, in the course of his investigations on the output of creatinine and creatine has come to a very similar conclusion. He suggests that there is in all probability a special "tissue" metabolism, and that the products which serve to maintain the nitrogen equilibrium in the living tissues are special ones.

These conclusions amount practically to the statement that

a certain degree of specificity of protein exists. Such a contention is strongly supported by the work of Kaufmann and of Murlin, who attempted to replace the ordinary meat protein of the diet by gelatine, but without complete success. It is, of course, well known that the members of the aromatic group of amino acids, like tyrosin, are absent from the gelatine molecule, that it is therefore not a true protein. As an American worker picturesquely puts it, "alongside of its brother-protein, gelatine stands as a prince of the blood whose escutcheon bears the 'bend sinister.' Such a one, though of royal lineage, may never aspire to the throne." It is stated, however, that if the gelatine be fed with the addition of the missing material, the replacement is much more successful. But even more conclusive than the work with gelatine are the experiments of Michaud. Michaud found that if he fed a dog on dog's flesh the amount of protein required to keep the animal in a condition of nitrogen equilibrium at a low level was much smaller than if any other protein were used. He discovered further that if horse flesh were used the intake of this material was smaller than if proteins which resembled less muscle protein, such as casein from milk, or a protein, gliadin, obtained from wheat, were used. This work has since been confirmed by Abderhalden.

We may, therefore, conclude that there are present in protein material specific nuclei which are more suitable for building purposes the nearer they approximate to the nuclei already present in the living tissues. When a foreign protein is fed, either these nuclei are not pre-existent, or they are, at most, present only in very small amount, and in order to build them up a much greater intake of protein is necessary. That such a change or reformation can take place has been demonstrated by the interesting experiment of Abderhalden and Samuely, in which they showed that the formation of the tissue proteins is an absolutely specific act apparently quite independent of the actual composition of the proteins fed. These workers severely bled a horse, and during the period of recovery—the period of active blood formation—they fed it on gliadin as its protein food. As this protein contains about 36 per cent of glutaminic acid, and blood proteins contain only about 8 per cent, then, if the protein synthesis were absolutely dependent on the nature of the protein introduced from without, they expected that the new blood proteins would be constitutionally different—that they would be richer in glutaminic acid. Such, however, was not

the case, as the blood proteins obtained from the horse by bleeding after full recovery from the initial hæmorrhage were of exactly the same composition as those obtained in the first instance. Here, then, we have direct evidence for some specific change taking place in the form of the absorbed protein just after absorption or during the process of resynthesis.¹

If this be accepted as correct, we must allow the tissues an abundant supply of protein (nitrogen) for rebuilding purposes. We do not know exactly what the bodily requirements from day to day are. If we give a very low intake of protein we may be either starving the animal in whole or in part, or causing it, at some expenditure of energy, to convert one amino acid or amino acid group into another—a transmutation which has not yet been fully proved. To put it in another way, if we remember that the protein molecule is built up of a series of amino acids, which for the present we may call A, B, C, D, and so on, and if we take it that on a certain day the body requires for purposes of repair of certain protein tissue x amount of, say, amino acid M, it does not matter whether the body in getting this amount of M has to discard x^{10} amount of, say, amino acid B and x^{30} amount of amino acid P. The body will reject this material. In support of such a contention is the repeatedly observed fact that the greater part of the ingested nitrogen from the protein is very rapidly excreted after absorption. For instance, in some experiments which I have been carrying out recently I have found an excretion of over 70 per cent of the ingested nitrogen within five hours.

The discussion of the rapid excretion of nitrogen leads to the consideration of another question, one which has led to much experiment but so far without any very definite conclusion. We know from the work of Voit and others that the nitrogen which is so rapidly eliminated appears in the urine for the most part in the form of urea. At any rate an amount of nitrogen equal in amount to that ingested is excreted, and it has been assumed with good reason that this nitrogen comes from the food (exogenous nitrogen), and

¹ The idea that proteins have specific properties is not a new one. Mulder in 1847 wrote, "The lion is so fierce, so powerful, not only because it is built as a lion but also because lion's blood flows in its veins. Lion blood comes not from rice or roots but from flesh. The cow is so calm not only because it is built as a cow but also because peaceful grass or hay blood flows in its veins. . . . Therefore he who is too spirited will eat green food like the cow : he who will be powerful will eat flesh like the lion."

not from the breakdown of protein tissue (endogenous nitrogen) already existent in the body.¹ Lang in his experiments claims to have shown that *in vitro* the tissues of the body retain their power of desamination, and, of course, if his work can be substantiated, then we have very good reason for believing that the rapid excretion of nitrogen following a protein meal is due to the breakdown of the food-protein amino acids, with the subsequent removal of the nitrogen as urea. Miss Bostock, in the Physiological Laboratory here, has repeated and amplified some of Lang's work. Evidence has been obtained that the tissues *in vitro* do desamine the various amino acids, but neither so rapidly nor so completely as Lang made out. This result is in full agreement with some other work which has been carried out elsewhere. When the same amino acids, as were tested *in vitro*, were administered to an animal by means of the stomach tube there was a rapid rise in the excretion of nitrogen.

There is an unfortunate tendency to concentrate all the attention on the metabolism of the protein moiety of the food to the neglect of the other two main food constituents. In order to gain a true picture of the course of total metabolism all three must be investigated and, as far as possible, in conjunction. It is a well recognised fact that both carbohydrates and fats have a marked sparing power over the catabolism of protein material. In the past these two foodstuffs have been merely regarded as sources for the supply of energy—as mere fuel. Evidence is gradually accumulating which points to the carbohydrates at least as playing quite a definite rôle in the anabolism of protein. This power is apparently not shared by fats, or, if they do possess it, they have it in a much lower degree. Further, carbohydrates would seem to play also a very intimate part in the metabolism of fats. Take diabetes mellitus as an example. Here, as the result of the imperfect combustion of fat, the condition of acidosis arises. The degree of acidosis can be markedly lessened if carbohydrate, even in small amount, be added to the diet. Indeed the results obtained by this addition have been so good that several modern workers maintain that it is nothing short of a criminal act to withhold absolutely carbohydrate from a diabetic, more especially as many cases, if care and time be taken to test them (and the test is not very difficult

¹ It is on this account that, if a proper estimation of the nitrogen output is to be made, it is absolutely necessary that the intake of nitrogen in the food be known. Without this knowledge deductions drawn from the output of nitrogen are without value.

to carry out), can be shown to be tolerant to small amounts of carbohydrate.

In conclusion, the fact to be remembered in connection with the protein requirements of the body is, that it is *the quality of the protein given which is important and not the quantity*, and it follows therefore that it is safer to give a relatively large intake than a small one. There is the further consideration, that in order to obtain the requisite daily caloric intake, protein must be consumed in fair amount. There is a limit to the intake of both carbohydrate and fat on account of the digestion. At most, carbohydrate and fat can supply only about three-quarters of the caloric requirements, and the balance must be made up by the addition of protein.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA.¹

THERE is a good deal of melancholy reading in this Report. The Report itself is an excellent piece of work: it bears the stamp of thoroughness and impartiality, and is worthy of all praise. But much of the subject-matter with which it deals is of a character to depress the reader; in many instances it evokes a feeling of contempt and disgust.

In the able introduction, written by Dr. Henry S. Pritchett, we have a clear statement of the present state of medical education in America, and the causes of the prevailing low standard. This low standard he attributes to "an enormous over-production of uneducated and ill-trained medical practitioners," and this in turn is due "in the main to the existence of a very large number of commercial schools, sustained in many cases by advertising methods, through which a mass of unprepared youth is drawn out of industrial occupations into the study of medicine."

Again, the modern requirements of efficient medical instruction include laboratories, and this means money; but nearly half of the medical schools have incomes below

¹ *Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching.* By Abraham Flexner. With an Introduction by Henry S. Pritchett, President of the Foundation. Bulletin No. 4. New York City, 1910.

\$10,000 (£2,000), and the character of the instruction is in accordance with these limited means.

Further, "many universities, desirous of apparent educational completeness, have annexed medical schools without making themselves responsible either for the standards of the professional schools or for their support."

Dr. Pritchett disposes of the argument that "a poor medical school is justified in the interest of the poor boy" by pointing out that it is "an argument in behalf of the poor medical school." He advocates fewer medical schools and better medical schools, fewer graduates and better trained graduates: and he points out that no university can be held in honour which, for the sake of its "institutional completeness," keeps "a low grade professional school" attached to it.

"The development which is here suggested for medical education," says Dr. Pritchett, "is conditioned largely upon three factors—first, upon the creation of a public opinion which shall discriminate between the ill-trained and the rightly-trained physician, and which will also insist upon the enactment of such laws as will require all practitioners of medicine, whether they belong to one sect or another, to ground themselves in the fundamentals upon which medical science rests: secondly, upon the universities and their attitude towards medical standards and medical support: finally, upon the members of the medical profession towards the standards of their own practice, and upon their sense of honour with respect to their own profession."

The redundancy of medical practitioners is illustrated in the case of small communities by the following statement:—"In a town of two thousand people one will find in most of our States from five to eight physicians, when two well-trained men could do the work efficiently and make a competent livelihood."

Before leaving Dr. Pritchett's contribution we will make a final quotation. "There is no need now of recriminations over what has been, or of apologies by way of defending a *régime* practically obsolete. Let us address ourselves resolutely to the task of reconstructing the American medical school on the lines of the highest ideals of efficiency, and in accordance with the finest conceptions of public service." Let us hope that these worthy aspirations for reform will be realised in the near future.

The Report, which is written by Dr. Abraham Flexner, is divided into two parts, and there is an appendix in the form

of a "table showing number in faculty, enrolment, fee income, budget of schools by States."

Part I, dealing with "Medical Education in the United States and Canada," contains fourteen chapters.

Chapter I is devoted to the historical and general aspect of the question: Chapters II and III, to the proper basis of medical education and the actual basis of medical education respectively: Chapters IV, V, VI, and VII, to the course of study: while the remaining chapters discuss the financial aspects of medical education, reconstruction, medical sects, the States boards, the post-graduate school, the medical education of women, and the medical education of the negro. In these chapters will be found much that is interesting, suggestive, and instructive. The criticisms are fearless, and at the same time justified by abundant evidence: the suggestions are clear and practical.

To the British reader, however, it seems strange that the writer should find it necessary to insist so strongly on the importance of a good general education before entering on the study of medicine, on the value of a knowledge of chemistry and biological science as a preparation for grappling with the problems to be encountered later in professional studies, and on the necessity for clinical and laboratory work as essential parts of an efficient medical education. In the Old World these things have long been accepted and put into practice. But when we turn to the state of affairs in America we cease to wonder at the earnest appeal of the writer. The prevalence of the *commercial* over the *scientific* and *professional* spirit seems to be at the root of the degradation in America.

After dealing with the great mischief done by turning out swarms of low grade doctors the reporter goes on to say—"With the over-production thus demonstrated, the commercial treatment of medical education is intimately connected. Low standards give the medical schools access to a large clientele open to successful exploitation by commercial methods. The crude boy or the jaded clerk who goes into medicine at this level has not been moved by a significant prompting from within: nor has he, as a rule, shown any forethought in the matter of making himself ready. He is more likely to have been caught drifting at a vacant moment by an alluring advertisement or announcement, quite commonly an exaggeration, not infrequently an outright misrepresentation. Indeed, the advertising methods of the commercially successful school

are amazing.¹ Not infrequently advertising costs more than laboratories."

Apparently the medical student in Kentucky need not stand much in fear of his preliminary examination (pp. 32, 33):—"The examiner, even where distinctly well intentioned, as in Kentucky, never gets sufficient control. The schools do not want the rule enforced, and the boards are either not strong enough or not conscientious enough to withstand them. Besides, the examiners lack time, machinery, and encouragement for the proper performance of their ostensible office. They are busy men—here, a country official; there, a school principal; elsewhere, a high school professor." . . . There is no set time when candidates must appear. They drop in as they please, separately: now, before the school opens; again, long after; sometimes with their credentials, sometimes without them. There is no definite procedure. At times the examiner concludes from the face of the papers, at times from the face of the candidate. The whole business is transacted in a free and easy way. In Illinois, for example, the law speaks of "preliminary" educational requirements; the State board graciously permits them to become subsequents. Students enter the medical schools, embark on the study of medicine, and at their convenience "square up" with one of the examiners. An evening call is arranged, then an informal talk, aiming to elicit what "subjects" the candidate "has had." He may, after an interview lasting from thirty minutes to two hours, and rarely including any writing, be "passed" with or without "conditions." If with conditions, the rule requires him to reappear for a second "examination" before the beginning of the sophomore year; but nothing happens if he postpones his reappearance until a short time before graduation. Besides, a condition in one subject may be removed by "passing" in another! "No technical questions are asked; the presumption is that the applicant won't remember details." Formerly, written examinations were used in part, but they were given up "because almost everybody failed." And it may at any moment happen that an applicant actually turned down by one examiner will be passed by another. The most flagrantly commercial of the Chicago schools operate "pre-medical" classes, when a hasty cram, usually at night, suffices to meet the academic requirements of the Illinois State board. "The

¹ One school offers any graduate who shall have been in attendance three years a European trip.

examiner's no prude: he'll give a man a chance," said the dean of one of them.

The study of anatomy seems to be pursued under very unfavourable auspices in the variety of school which the writer terms "basely mercenary." "Almost, but not quite, all the schools dissect. At Meridian (Mississippi), for example, anatomical material is too difficult to get. In Chicago they have learned how to teach anatomy practically without dissection. At the National Medical University the teacher dictates, the students learn. This process is kept on, night after night, from October until the middle of April. So far there had been no dissection at all, but there would be ultimately, in 'May or June,' though there were no cadavers at hand as yet. . . . The Central College of Osteopathy, Kansas City, Missouri, holds that the student should know anatomy before he dissects: 'he will get more out of it.' On November 8 there was no cadaver in the school: they already had had one, and 'will get another in February.' At the Bennett Medical College, Chicago, there was witnessed a quiz in anatomy in a room without skeleton, bone, or chart. . . . Elsewhere, dissecting-rooms are indeed found, but the conditions in them defy description. The smell is intolerable; the cadavers now putrid, as at Temple University (Philadelphia), the Philadelphia College of Osteopathy. . . . At the Barnes Medical College (St. Louis) the first-year students listen to lectures only in the last 'semester;' they are not permitted to dissect, because first-year men only 'hack and butcher.' The dissecting-room of the Kansas Medical College, Topeka (the medical department of Washburn College), did duty incidentally as a chicken yard. Corn was scattered over the floor—along with other things—and poultry fed placidly in the long intervals before instruction began" (pp. 87, 88).

It is out of the question to attempt dealing with all the chapters in Part I.

Chapter X is devoted to "The medical sects"—a nauseous subject. The following telling sentences are significant, and obviate the need for further criticism:—"Sectarian institutions do not exist in Canada: in the United States there are 32 of them, of which 15 are homeopathic, 8 eclectic, 1 physiomedical, and 8 osteopathic." "The ebbing vitality of homeopathic schools is a striking demonstration of the incompatibility of science and dogma." "The eclectics are drug mad; yet, with the exception of the Cincinnati and New York schools, none of them can do justice to its own

creed. For they are not equipped to teach the drugs or the drug therapy, which constitutes their sole reason for existence." "The eight osteopathic schools fairly reek with commercialism."

The last two chapters are short—one is devoted to "The medical education of women" and the other to "The medical education of the negro."

There is free scope given in America for the woman who wishes to study and practise medicine. The result is somewhat curious. "Now that women are freely admitted to the medical profession, it is clear that they show a decreasing inclination to enter it. More schools in all sections are open to them: fewer attend and fewer graduate. True enough, medical schools generally have shrunk: but as the opportunities of women have increased, not decreased, and within a period during which entrance requirements have, so far as they are concerned, not materially altered, their enrolment should have augmented, if there is any strong demand for women physicians or any strong ungratified desire on the part of women to enter the profession. One or other of these conditions is lacking—perhaps both."

As to the black man. "The negro must be educated not only for his own sake, but for ours. He is, as far as human eye can see, a permanent factor in the nation. He has his rights, and due, and value as an individual: but he has, besides, the tremendous importance that belongs to a potential source of infection and contagion."

Part II is devoted to "Medical Schools of the United States and Canada—arranged alphabetically by States and Provinces and separately characterized."

Here we have a detailed account of each school under the headings—entrance requirements, attendance, teaching staff, resources available for maintenance, laboratory facilities, and clinical facilities, together with the date of visit. The long list comprises schools of all grades—good, bad, and indifferent—the two last, unfortunately, greatly predominating. On the whole it is dismal reading.

When the school is worthy of censure it is certainly "dealt with" in a very "faithful" way. Here is an example:—

"(3) California Medical College, eclectic. Organized at Oakland in 1879, this school has led a roving and precarious existence in the meanwhile.

"*Entrance requirement.*—Nominal.

"*Attendance.*—9, of whom 7 are from California.

"*Teaching staff.*—27, of whom 26 are professors.

"Resources available for maintenance.—Fees, amounting to \$1,060 (estimated).

"Laboratory facilities.—The school occupies a few neglected rooms on the second floor of a fifty-foot frame building. Its so-called equipment is dirty and disorderly beyond description. Its outfit in anatomy consists of a small box of bones and the dried-up filthy fragments of a single cadaver. A few bottles of reagents constitute the chemical laboratory. A cold and rusty incubator, a single microscope, and a few unlabeled wet specimens, &c., form the so-called 'equipment' for pathology and bacteriology.

"Clinical facilities.—There is no dispensary and no access to the County Hospital.

"The school is a disgrace to the State whose laws permit its existence.

"Date of visit.—May, 1909."

There is no need for quoting more examples. Happily there are many instances where praise can be bestowed, and it is then given in an equally frank and hearty way.

It is pleasing to note the following statement in favour of Canada:—"In Canada conditions have never become so badly demoralized as in the United States. There the best features of English clinical teaching had never been wholly forgotten. Convalescence from a relatively mild over-indulgence in commercial medical schools set in earlier, and is now nearly completed" (p. 13).

This review has already extended beyond due limits, and yet many points in the Report have been left untouched.

We all know that there are some good medical schools—and many distinguished physicians and surgeons—in America. They are held in honour all the world over. But the picture presented by "*Medical Education in America*" is on the whole an ugly one. There are some bright spots, but the blots and smudges predominate. It is earnestly to be desired that the Carnegie Foundation Report may inaugurate the production of a more pleasing picture, and one worthy of America and in accordance with the highest ideals of medicine.

Nota bene.—"It is the purpose of the Foundation to proceed at once with a similar study of medical education in Great Britain, Germany, and France, in order that those charged with the reconstruction of medical education in America may profit by the experience of other countries."

Let us hope that our house will be found in order!

Obituary.

W. HAROLD GILLATT, M.B., CH.B. GLASG.,
CAPTAIN R.A.M.C.

WE regret to have to announce the death, which occurred at Cairo on 8th ult., of Captain W. Harold Gillatt. Captain Gillatt studied medicine at the University of Glasgow, and graduated M.B., Ch.B., in 1905. He passed into the Royal Army Medical Corps in 1906, and soon thereafter was seconded for service under the Egyptian Government.

THOMAS REID, M.D., F.R.F.P.S.G.

THE death, on 23rd ult., of Dr. Thomas Reid occurred as we were going to press. We hope to publish a notice of Dr. Reid in our next issue.

CURRENT TOPICS.

APPOINTMENTS.—The following appointments have recently been made:—

J. Goodwin Tomkinson, M.D., to be Consulting Dermatologist to the County Council of Lanarkshire.

Hugh Macintyre, M.B., C.M., to be Examiner of Recruits for the Territorial Force in the Bridgend and Ballygrant districts of Islay, in succession to Dr. A. MacArthur, deceased.

A. Lewis McMillan, M.D., Henry L. G. Leask, M.D., F.R.F.P.S., and W. Cochrane Murray, M.B., C.M., to be Extra Surgeons to the Eye Infirmary.

H. B. W. Morgan, M.B., Ch.B. (1909), to be Resident Assistant Medical Officer of the Wandsworth Union Infirmary.

ST. MUNGO'S COLLEGE: MACKINTOSH LECTURESHIP IN PSYCHOLOGICAL MEDICINE.—At a meeting held on 23rd March, the governors of the College appointed Mr. James H. Macdonald, M.B., Ch.B.Glasg., to this lectureship, in room of Dr. Hamilton C. Marr, resigned.

ST. MUNGO'S COLLEGE: ASSOCIATION WITH UNIVERSITY.—The closing meeting of the winter session of St. Mungo's College was held on 23rd March in the large hall of the College, Castle Street. Mr. James Macfarlane, the president, was in the chair.

The Chairman said that at the end of the academic session a year ago he was able to refer to the increased attendance they had recorded during that year, and he was pleased to be able again to point to a further increase in the number of students during the year now closed. Reference was also made at their last meeting to the negotiations which were then just about completed between the managers of the Royal Infirmary, the University authorities, and the governors of St. Mungo's College. He was now able to report that these negotiations had been completed, and that the necessary Parliamentary sanction had been obtained. It was the expectation of the governors that the four new chairs in the Royal Infirmary, viz., medicine, surgery, midwifery and gynæcology, and pathology, would be in operation by the beginning of their next winter session. The governors could not at present state exactly what would be the position of St. Mungo's College in regard to certain classes of the earlier years of the curriculum, but the whole subject would be carefully considered, and he could confidently assure them that every care would be taken to conserve carefully the best interests of the St. Mungo students. Now that it was to have a connection with the University it was the expectation of everyone that the medical school of the Royal Infirmary would become a great school of medicine, and share in the development of medical science which they were just approaching, a development, he believed, that would surpass even the great advance made in surgery after Lister's discovery of antiseptic treatment. It was in that firm belief that the governors of St. Mungo's College entered into the negotiations with the University which were now completed. He congratulated those who had finished their curriculum, and hoped those who had yet to finish would find in that school all the training that might be necessary to fit them for their profession.

The medals and prizes were then distributed, and, on the

motion of Mr. John Glen, the Chairman was thanked for presiding.

THE JOHN REID PRIZE.—This prize has been awarded by the trustees to Mr. James Walter McLeod, M.B., Ch.B., till recently a student of the University. Mr. McLeod's thesis is entitled, "On the hæmolysin produced by pathogenic streptococci and on the existence of antihæmolysin in the sera of normal and immunised animals," and the research, the result of which is embodied in this paper, was conducted in the pathological laboratory of the University. The prize, which may be awarded for one, two, or three years, has been awarded to Mr. McLeod for one year.

COMPLIMENTARY DINNER TO DR. GEORGE HALKET.—The past and present honorary and acting members of the staff of the Royal Samaritan Hospital met in the Grand Hotel on the evening of 9th March for the purpose of entertaining to dinner Dr. George Halket, late physician, and now consulting physician to the hospital. Dr. Nigel Stark, the senior surgeon, occupied the chair, and among others present were Drs. D. N. Knox, W. L. Reid, Samuel Sloan, A. W. Russell, W. D. Macfarlane, and D. Shannon. The Chairman said that it had been felt that the retirement of their guest, one of the founders of the hospital, after twenty-five years' service, could not be permitted to pass unnoticed, and they had gathered together in order to mark the occasion, as well as to bear testimony to the friendly sentiments which his colleagues entertained towards Dr. Halket. In their name he congratulated him upon his long and honourable service as a hospital physician and a medical practitioner. The toast was heartily received. In his reply, Dr. Halket recalled the earlier days of the hospital, which, started in the year 1886 on a very modest scale, is now one of the largest gynæcological hospitals in Britain.

THE FEEDING OF INFANTS.—The last of a series of lectures, under the auspices of the Partick Civic Guild, was delivered by Dr. Leonard Findlay in the Burgh Chambers, Partick, on the evening of 16th March. Mr. John Bryce, vice-president of the Guild, presided. The subject of the lecture was "Some Problems in Infant Feeding." Dealing with the question of rickets, Dr. Findlay showed how the disease was distributed throughout the animal kingdom. In human beings the disease was for the most part limited to the civilised races,

being rare among primitive peoples. It was particularly prevalent in cities amongst the poorest classes. This was probably due to the unhygienic conditions under which the people lived, and the lack of facilities for fresh air and exercise. The lecturer referred to experiments he had carried out on dogs, showing that by confinement alone, irrespective of food, rickets could be induced. The best conditions under which the disease could be fought were plenty of fresh air and exercise, such as might be obtained in a garden city.

GLASGOW HOSPITAL SUNDAY FUND.—The seventeenth annual meeting of the contributors to the Glasgow Hospital Sunday Fund was held on 21st March in the Christian Institute—Sir James Bell, Bart., presiding. In the annual report, which was submitted by Mr Henry Johnston, secretary, it was stated that 408 churches and 222 Sabbath schools contributed to the fund during the year. The total income from these collections, including donations and bank interest, amounted to £4,726, 19s. 6d., or an increase of £69, 0s. 8d. The sum set aside for the infirmaries was £4,510, and the allocation was as follows:—Royal Infirmary (608·8 beds), £1,987, 12s. 3d.; Western Infirmary (524·6 beds), £1,712, 14s. 4d.; Victoria Infirmary (248 beds), £809, 13s. 5d. After meeting the working expenses, there was a balance of £4, 5s. 11d. carried forward to next year. The last Sunday of November had been fixed for next collection. With the view of placing the fund on a more satisfactory and less fluctuating basis, the committee suggested the establishment of a capital fund by legacies and donations, from which in time a considerable income might be derived. Testators and donors to this fund have the assurance that their benefactions would be applied to the infirmaries in proportion to the work done by each.

The Chairman, in moving the adoption of the report, said that year by year this fund was found to be more useful than ever, and it was now a valuable auxiliary to the infirmaries. These institutions in Glasgow were growing in importance. It was now 17 years since the fund was inaugurated, and since then it had divided among the three infirmaries a sum of £87,000. It was quite evident that the hospitals and the three infirmaries of Glasgow needed increased liberality on the part of the citizens. These institutions were increasing in size, and the number of patients admitted to them was also increasing. Yet their annual revenue was not increasing

in the same ratio as their expenses. It would be well if the ordinary revenue could be made to meet the ordinary expenditure, so that all bequests might go to the capital account. He should like to see the church collections reach a total of £5,000, a level which had been reached on three previous occasions.

Professor Glaister seconded, and said there was no doubt something would have to be done for the infirmaries either in the way of donations or benefactions. If they were to come under the influence of the State he believed it would be the first sign of the decadence of our hospitals. They might be sure that the infirmaries were playing a very important rôle in the welfare of the city. But for them there would be a very large amount of sickness unattended to, with dire results. The hospitals might take full credit for not a little of the lowering of the death-rate of the city.

The report was adopted unanimously.

MANAGEMENT OF PUBLIC-HOUSES: THE "SAMLAG" SYSTEM.
—The annual meeting of the Glasgow Branch of the British Medical Temperance Association was held in the Faculty Hall, St. Vincent Street, on the afternoon of 23rd March. Considerable discussion took place with regard to the advisability of substituting public for private ownership in public-houses as a means of social reform.

The subject was introduced by Dr. W. L. Reid, president of the Association, who submitted a paper on "How Norway Became Sober." In the course of the paper he described the "Samlag" system of public-house management as it exists in Norway. The word "Samlag," he said, meant "association," and the system was simply a modification of the "company" system in Sweden or the "disinterested management" system in this country. The "Samlag" had the right to sell wine and beer, and it alone, with some exceptions, could sell spirits in quantities under 250 litres, or about 55 gallons. The first Samlag was opened in 1871, and now thirty-two towns had adopted the system. There were only two towns in which the sale of spirits was allowed independent of the Samlag, and there were other twenty-nine towns in the country which had declared against it and in favour of total prohibition. Dr. Reid quoted the opinions of prominent Norwegians, nearly all of whom agreed that the Samlag had been a most powerful instrument in bringing the country to its present position of comparative abstinence. The question naturally arose, Could this country apply beneficially the

Samlag or "disinterested management"? He had come to the conclusion that while the Samlag had done great good in Norway, and had paved the way for total prohibition, it could not do much for this country. It had to be remembered that in Norway there had been no idea until lately of total prohibition and local option only for strong drinks, whereas in Scotland both had been long thought of, spoken of, and fought for. Indeed, for many years Scotland had been as ripe for these advances as disinterested management could possibly make it. The extension of the method, in his opinion, would be a retrograde movement.

The Rev. Dr. D. M. Ross expressed his appreciation of the Samlag system, and advocated the application of disinterested management of the same kind in this country. It would be an admirable thing, he said, if public-houses were managed by men determined to reduce drinking to a minimum, instead of being regulated, as they were to-day, by men whose aim was to sell as much liquor as possible within the limits of the law.

Mr. Peter Chalmers said that the Norwegian people would have been better had the Samlag never been introduced, because then, he believed, the country would have been enjoying total prohibition to-day. Local option had been adopted in the country districts of Norway as far back as 1843, while the Samlag did not come into existence till 1871. Obviously the Samlag had not created the desire for local option, and he believed that but for the intervention of the Samlag the social evil would have been removed by means of education.

Dr. Brownlie McKendrick referred to the Glasgow Public-house Trust as an example of disinterested management, and said that the Trust had sought to place new licences in localities where no licences existed at present and where there was no need for them.

Mr. John Mann, secretary of the Trust, said, in reply, that they became applicants only when there was a danger that a licence would fall into private hands. He maintained that it was due to the intervention of the Public-house Trust that there was no licence in the Anniesland district of Glasgow. By applying for a licence there the Trust had succeeded in "blocking" any private trader from getting it. The Trust would never think of opening a public-house in a district where there was no danger of anyone else doing so.

"606."—There is now quite a large amount of literature on the Ehrlich-Hata remedy, and it is constantly increasing in

volume. With the aim of bringing together the many communications which have appeared from time to time in the periodical publications, Dr. Bresler, of Lüben, issued in June, 1909, a collection of published observations on the remedy. A second edition of the book was issued in August of last year. It "completes the review of the work, and summarises the further extremely interesting observations that have been published in the interval." The volume, which has been translated into English by Dr. Eder, of Frankfort-on-Main, is one full of interesting information. As we have just indicated, it consists of reports, collected from various sources, which have from time to time been published in the *Psychiatrisch-Neurologischen Wochenschrift*, of which Dr. Bresler is editor. That they appear in a journal devoted to psychiatry is explained by the close interest with which psychiatry follows the treatment of syphilis.

The reader will find accounts of the experience of many observers with the drug in cases of syphilitic manifestations of all kinds. The compiler has exercised a judicial attitude, and has included unfavourable as well as favourable reports. The material is very valuable; but the volume is sadly marred by the want of an index, and we fear that this defect will tell against its becoming popular. Taking it, however, as it stands, it is a contribution to the subject which the student cannot afford to ignore. The general impression which the reader receives is one strongly in favour of the remedy.

It is well, however, to receive with caution all statements regarding a new drug, and in this connection we would refer to a paper by C. F. Marshall, which appeared quite recently in *The Lancet*. Marshall postulates that before any drug can replace mercury and iodides, it must be proved capable of producing one or more of the following effects:—The aborting of syphilis, the prevention of tertiary or para-syphilitic manifestations, and the healing of syphilitic lesions with greater rapidity, greater constancy, and at the same time with less liability to relapse and recurrence than is the case with mercury and iodides. It must also compare favourably with the latter as regards dangerous toxic effects. After a consideration of these several points, he comes to the conclusion that in the present state of our knowledge there is no drug which can replace mercury in the treatment of syphilis, and that the administration of arsenobenzol is attended with many risks and dangers.

Such an opinion is one which cannot lightly be passed over,

and we have thought right to place it before our readers. At the same time we feel that arsenobenzol is on its trial, and that it must not be condemned till fuller evidence than is at present available is brought forward. Of one thing we feel certain, that its use should not lightly be undertaken, and that the patients to whom it has been administered should be kept carefully under skilled observation.

"THE LIFE AND LETTERS OF THE LATE SIR JOHN HALL."—Messrs. Longmans, Green & Co. are publishing the Life and Letters of Sir John Hall, M.D., K.C.B., the Principal Medical Officer of the Crimea during the great campaign. The unique feature of this publication is that it is the first biography of a distinguished Englishman written by a well-known Hindu writer. The work is by Mr. S. M. Mitra, author of *Indian Problems, Hindupore, &c.* Rear-Admiral Sir Massie Blomfield, who served throughout the Crimean campaign, has written an introduction. The book deals with Sir John Hall's career in Flanders, the West Indies, Spain, South Africa (including the Kafir War of 1852), India, and the Crimean campaign. It will contain several illustrations, including one of the wounded at Waterloo, whom Dr. Hall, as hospital assistant, attended.

DEGENERATION.—At a conversazione in London last month, under the auspices of the Ethnological Society, Dr. Bernard Hollander gave an address on "The Problem of Degeneration." He said the form of degeneration which was the greatest burden on the community was that which manifested itself in the various degrees of mental and moral defects, ranging from extreme idiocy and imbecility to the minor forms of feeble-mindedness. The degenerate hated regular occupation and a well ordered existence, and if of poor parentage might prefer a vagabond life or that of the habitual beggar. He followed the path of the least resistance, and easily sank into vice and crime. As regarded the causes of degeneracy, the first and most generally accepted cause of degeneracy was hereditary predisposition. True, a man did not inherit actual mental disease from his parents, but he inherited a defect of constitution which rendered his brain and nervous system unstable and liable to attacks of disordered function from causes which would not affect a man of sound constitution. It was not necessary that he should have had insane progenitors; it was sufficient that his parents, through disease, accident, or disregard of the laws of health, failed to supply him with the

necessary balance of mind and body which constituted the true condition of health. The mass of lunatics and degenerates came from the uneducated lower strata of the people, the raw material, as it were, of society. The real cause was not the advance of civilisation but its deplorable consequences—the crowding of the population into towns, where the housing and general conditions of life are unfavourable to the healthy growth of children. Some people said that poverty, degeneration, and insanity were largely due to drink, ignoring the two obvious facts that insanity is on the increase and that drinking is not. It was more likely that instability of the brain, and a tendency towards insanity, finding expression in defective self-control, occasioned alcoholic intemperance than that alcoholic intemperance occasioned insanity. But if men drank less nowadays, women seemed to drink more, especially amongst the upper classes, perhaps because hotel life and restaurant parties had accustomed them to it. Degeneration was also largely due, especially amongst the poor, to the deplorable effect on infant health of deficient nourishment owing to artificial feeding, and the general ignorance of the poorer women of hygiene, cookery, domestic economy, as well as the management of infants.

THE SEVENTEENTH INTERNATIONAL CONGRESS OF MEDICINE.—The Seventeenth International Congress of Medicine will meet in London in the summer of 1913. The exact date is to be fixed by the International Permanent Committee, which will assemble for the first time in London on 21st and 22nd April next, under presidentship of Dr. F. W. Pavy.

At the same meeting the list of sections of Congress will be constituted. Any wishes or propositions concerning the arrangement of this list may be sent, up till 1st April, to the Hon. General Secretary of the Permanent Committee, Prof. H. Burger, Vondelstraat 1, Amsterdam, or to the Bureau of the Committee, Hugo de Grootstraat 10, The Hague.

The Committee will be glad to receive, before the same date and at the same addresses, any propositions concerning the organisation of the Congress.

HUMAN REMAINS DISCOVERED DURING THE ARCHEOLOGICAL SURVEY OF NUBIA.—In our February issue (p. 131) we noted shortly the Report for 1907-1908 of the Archaeological Survey of Nubia. The second volume of the Report, dealing with the Human Remains, now falls to be considered. The volume,

which is the work of Professor Elliot Smith and Dr. Wood Jones, contains an introduction, by Professor Elliot Smith, followed by chapters on the racial problem, the work in the neighbourhood of Shellal and in the cemeteries further south, mode of burial and treatment of the body, anatomical variations and determination of age and sex of skeletons, general pathology, and fractures and dislocations.

Feeling that no adequate archæological survey of Nubia could be accomplished if the racial problem were left out of account, it became necessary to devise some scheme for dealing with the human remains which would be brought to light in the course of the excavations.

Professor Elliot Smith tells us that the difficulties in the way of carrying out an adequate study of the human remains were almost insuperable. When he went to Shellal, in October, 1907, to begin this work, there were already more than two thousand bodies awaiting examination, and every day added to their number. As the time which he could give to the work was wholly insufficient to allow of his examining even samples from the numerous cemeteries, it was found necessary to obtain the services of an anatomist, who would live in camp and devote his time to examining and recording the remains as they came to hand, and Dr. Wood Jones was appointed to this responsible task.

Beginning at Shellal, there was a large series of archaic bodies buried in the plain, a cemetery of early Christians on the island of Biga, and a series of tall negroid men on the mainland. Then there remained about three thousand bodies of Egyptians of the New Empire, Nubian mummies of the Byzantine period, mummies of Ptolemaic priests of Philæ, and criminals executed in Roman times. The opening up of many cemeteries further south prevented the examination on the spot of all of the above material, but large collections of skeletons were made for future study, and Dr. Wood Jones was thus enabled to go south and keep pace with the archæological work there. Keeping this in mind, it will be understood that the present Report does not pretend to be complete, and that the final conclusions must rest on detailed laboratory study of the material collected, and to be collected during the next two years.

The discussion of the significance of the pathological problems raised in the first season's work is dealt with, however, as fully as possible, so that this aspect of the survey will not call for consideration in later Reports. In editing these portions of the Report, Professor Elliot Smith has inserted

notes in places where his experiences and opinions differ from those of Dr. Wood Jones.

From the point of view of the medical reader, the chapters dealing with anatomical variations, general pathology, and fractures and dislocations, are perhaps the most interesting portion of the Report.

In the introduction to the chapter on variations, pretty full mention is made of a source of error in estimating alterations from the normal in the skeletons from these old cemeteries. This error depends on the fact that in bones that have been long buried, very marked changes may take place as the result of pressure in the grave. "An adult skull which is unbroken and has no sutures strained open will retain its form perfectly under almost any conditions; but this is not true of the pliable skull of the child, or an adult's skull that is broken, strained, or decayed. The continued pressure which may be exerted on such skulls in the grave may produce any degree of cranial deformity in time." In the case of the burials in the cemetery in Shellal, "the bodies were buried in alluvial mud, and upon their graves the main street of modern Shellal had afterwards come to be situated. Scarcely a skull in this portion of the cemetery retained its proper shape: they were elongated, flattened from side to side, or compressed from above downwards, just as they happened to be lying in the grave; and all were broken with gross fractures, for the most violent pressure had been exerted upon the skulls long after the time of their burial. The skull of a young child needs no fracture to enable it to become distorted: pressure alone will mould the pliable bones, and produce heads of the most remarkable shape" (p. 221 *et seq.*). But while pressure from the trampling of naked feet over bodies buried below a highway accounts for some *post-mortem* distortions, and the yielding of the thin bones of young skulls accounts for others, we have also to reckon with "the gradual steady pressure of the contents of the grave itself. The body may be put into its grave in a position in which some tension is exerted on a particular bone, or such tension may result from the positions into which bones fall after decomposition has given gravity free play on the parts of the skeleton. In these cases the pressure starts from the time of burial, and then it acts to the greatest advantage, for the bone is still somewhat elastic." The effect of grave-pressure was best seen in pit-burials. After decomposition had liberated the individual bones the bodies fell together and certain bones were subjected to unequal pressures, and so became

bent and distorted. In the case of one skull this distortion had acted antero-posteriorly, and closely approximated the posterior edge of the hard palate to the foramen magnum, and the deformity had been produced with the least possible amount of fracture. In the "flexed" interment of the pre-Dynastic body the distortion was seen as a bending of one ulna or fibula, caused by the uppermost limb bones being thrown across the lower and supported at one point only of their total length.

The question of age has to be settled by reference to the skeleton as a whole, as closure of the cranial sutures by itself affords no reliable evidence of age. Thus, in the skull of a woman who, from other evidence, was of advanced age, none of the sutures were closed upon the outer surface, although it would have been confidently expected that all would have shown a marked degree of closure, or even obliteration. On the other hand, cases of premature closure were met with. Variations in the direction of reduction or of enlargement of the speno-maxillary fissure were found in many instances, and illustrations of these are to be seen in the volume of plates. Variations in the vertebral column, ribs, and sternum were also noted. In connection with the eruption of the teeth, it is shown that the third molar may be cut at a very early age, and the complete eruption of all the molars before the final junction of the primary epiphyses of the limb bones was a common event.

With regard to the "sexing" of the bones, the characteristics of the individual skull may mislead. A feature "of the utmost diagnostic importance" is the presence of pre- and post-auricular grooves at the hinder part of the ilium. The auricular surface in woman is smooth and reduced in size so as to facilitate the movements which take place during parturition; and to compensate for the weakness which this mobility of the sacro-iliac joint implies, the articulation is supported by strong ligaments which are lodged in the above-mentioned grooves.

While we are forced to remain in ignorance as to the cause of death of the great bulk of the people buried in these Nubian cemeteries, yet in many cases the remains gave evidence of diseases from which the individuals had suffered. In this connection, it is a striking fact that in some six thousand bodies examined, there were no traces of tubercle, syphilis, or rickets, and we may take it that these three pathological conditions, which are to-day so terribly prevalent, were almost certainly unknown in ancient Nubia and Egypt.

Evidence of malignant disease has not yet been met with in an ancient Egyptian body, but it has to be borne in mind that this disease manifests itself in the bones more rarely than those. It is certain that spondylitis deformans has been mistaken for spinal caries, and it has been shown that the changes in the skull bones at one time attributed to syphilis are really due to the gnawing of the bone by beetles. In those cases in which the soft parts of the body were preserved additional evidences of disease were found. Thus, unmistakable cases of prolapse of the bowel and of the vagina were met with, and the adhesions of an old appendicitis were shown in the pelvis of a young woman of the Byzantine period, buried in the cemetery of Hesa. Examples of pleural adhesions, atheroma, renal calculi, and gout also came to hand. Rheumatoid arthritis is to be looked upon as the bone disease of the ancient Egyptian Nubian. Dr. Wood Jones is fully alive to the difficulties attending the nomenclature of this condition, and he names the different manifestations of the disease "osteitis deformans" (*not* Paget's disease), "arthritis deformans, and spondylitis deformans," according to the part of the skeleton affected. The three are, however, usually met with in association: in these bodies the pathological changes are by no means limited to the surface of the bones actually engaged in the articulation, but the whole structure of the shaft of the bone in the vicinity of the joints is profoundly affected. The disease may be found at any period of life after ossification is complete. The causal factor was the conditions of life in the Nile valley, and the disease is to be seen in the present-day inhabitants of Nubia. The prominent feature of the more frequent type of the disease is irregularity of the articular surface rather than eburnation, and bony ankylosis is the common result. The vertebral column is affected much more frequently than other parts of the skeleton, and there the distribution of bony irregularities tends to be unilateral.

After some interesting observations on the teeth of these archaic people, in which is described the even wearing and the compensating repair, as compared with the uneven wearing and the caries of more luxurious and of more modern peoples, the subject of inflammatory conditions of bone receives attention. An interesting case of mastoid disease is described, and illustrated by a drawing showing perforation of the bone in the supramental triangle. Cranial ulceration is then described, and the view expressed of its being the result

of trauma of the scalp from the carrying of weights on the head. The rarity of septic inflammatory processes in the bones after fractures that must have been compound shows how entire was the absence of sepsis in the ancient population. This chapter closes with remarks on the marking of bones due to the attacks of beetles.

The next chapter is devoted to fractures and dislocations. We cannot refer at any length to the many interesting examples of fractures which were obtained. From comparison of these (160 in number) with the figures of the London Hospital, and with Stimson's figures for New York, it is found that in the Nubian series fractures of the head and face are relatively common, and probably an index of the more primitive conditions of life and civilisation. Fracture was much more common in the femur than from the knee downwards, and was the result of considerable violence. The greater frequency of fractures of the leg in London at the present day is looked upon by Dr. Wood Jones as due to the wearing of boots, making the individual less sure-footed. Fractures in the fore-arm, however, occur with double the frequency of modern statistics, and they are found more commonly in the ulna, from defending the head from the *naboot*, or stout staff, which would seem to have played a considerable part in maintaining domestic discipline. (This latter supposition is supported by the frequency of the occurrence of the lesion in females.) Fractures of the bones of the hand, however, were very uncommon, and this is not surprising when one reflects that their frequency at the present day is due to crushes by machinery and to various trade accidents. Notes on the individual cases are given, with observations appended. In some instances the bodies have been buried with the splints remaining in position, and descriptions of these are supplied. Some very interesting remarks are made on *ante-mortem* fractures and on deaths resulting from violence. As regards dislocations, there are notes of only three cases, and of these, only one is typical, viz., dislocation of the femur backwards towards the sciatic notch. The other two are atypical displacements of the fore-arm bones at the elbow.

No one interested in the history of disease and of medicine and surgery can afford to neglect the present volume of the Report, characterised as it is by scantiness of hypothesis and abundance of facts. It would be difficult to over-estimate either the wealth of information which it contains or the value of the many plates which so ably elucidate the text.

NEW PREPARATIONS, &c.

From Messrs. Burroughs Wellcome & Co., London.

Epinine.—This is a solution of a synthetic product of 1 in 100 strength intended to replace the familiar extracts of the suprarenal gland. It is stated to be 3 to 4 dihydroxy-phenylethylmethylamine, and is said to be more stable than the natural suprarenal principle. It is claimed to produce all the effects of the natural product, and, in addition, it is said that the rise in blood pressure is more prolonged in the case of the artificial product. Quantitatively, 1 in 100 epinine is said to be equal to 1 in 1,000 solution of the natural principle. It is supplied in bottles of 10 c.c. and 25 c.c. of the 1 in 100 solution, and also as a sterile solution in *Vaporole* containers.

From Gerth Van Wyk & Co.

Hommel's Hæmatogen.—This fluid preparation of hæmoglobin is stated to contain 80 per cent of fluid hæmoglobin with 20 per cent of glycerine and a trace of flavouring matter. It is quite a palatable preparation, and is recommended for use in various conditions of weakness or of deficient red colouring matter in the blood, and it is claimed that on account of the albuminous matter contained in it, in fluid form, it is more a food than a medicine. Spectroscopically, bands are seen corresponding to those of hæmoglobin.

From Messrs. Callard & Co., 74 Regent Street, London, W.

We have received from this well-known firm several samples of their foods for diabetic patients, including their Prolacto Bread, Prolacto Biscuits, Casoid Biscuits, Casein Lunch Biscuits, and Coconut Biscuits. As tested with iodine, they are all found to be suitable for diabetic subjects. Prolacto Bread contains less than 1 per cent of carbohydrates. We have tested in the past many specimens of the special food preparations made by this firm, and, so far as we can speak from personal examination, they are invariably suited for their purpose. The foods submitted for examination on the present occasion are very palatable.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1910-1911.

MEETING IV.—25TH NOVEMBER, 1910.

PROFESSOR RALPH STOCKMAN *in the Chair*.

III.—VACCINE THERAPY IN RHEUMATOID ARTHRITIS AND ALLIED CONDITIONS.

BY DR. LYON SMITH (London).

(Concluded from p. 223.)

CASE II.—My next case is that of an unmarried lady of 38, with a history of rheumatoid arthritis of six years' duration, right hip-joint chiefly affected. This had been x-rayed twice and found to show bony outgrowths. She had more or less constant pain of a dull aching character, walked very lamely, and her right leg was one inch shorter than the other: she had tried many forms of treatment.

Cultures from her gums showed, amongst many other organisms, the diplococcus rheumaticus. At her first visit I gave her 4 millions of a stock vaccine of the diplococcus rheumaticus whilst her own was being prepared. Four days later the patient wrote that there was a marvellous change, the pain having entirely gone, and she had been able to walk three miles without discomfort. She had since then had three injections of 3 millions only of her own diplococcus, and at the end of a month she and her family both think that the lameness is very much better, and she has no pain at all.

CASE III.—An unmarried lady, aged 32, very badly crippled, "tied up into knots at a good many joints." The history obtained from her suggested a coliform infection, as well as the diplococcus rheumaticus which was found in her gums. The coliform vaccine was obtained from the bladder.

She has had several inoculations from her doctor, Dr. Ranking, of Tunbridge Wells, who writes on 22nd November saying that she is certainly beginning to make a little headway, although it has been necessary to try and increase her vital reaction by suitable remedies. This note of Dr. Ranking's reminds me of the important question of insisting upon absolute rest and also very nourishing diet in the treatment of these cases as being absolutely essential to its success. It is quite hopeless for the majority of cases to expect any good from vaccine treatment unless one pays attention to every little detail of general treatment. One must guard the patient most carefully against all depressing influences, such as cold, damp, "stuffy" air, and all matters of a worrying nature must be withheld, if possible. The work has to be done by the patient's own phagocytes, and these cannot work if they are worried. I find it good practice to give patients under vaccine treatment 15 grains of citrate of soda in a tumblerful of warm milk, morning and evening, between their ordinary meals. The object of this is to make the blood more fluid, as limpid blood more rapidly finds its way through the capillaries and tissues of the infected area.

CASE IV.—This was a case of a lady of 53, who began to suffer from chronic rheumatism soon after one of her confinements, who suffered for several years from a retroflexed uterus and endometritis, and who has had rheumatic endocarditis, and still has a bad mitral regurgitation. She has a good deal of stiffness and deformity in her joints.

I am treating her with autogenous vaccine of her own diplococcus rheumaticus. She has only had two small doses of her own vaccine so far, but the outlook is hopeful to this extent, that she has been able to do without her daily dose of aspirin, which was the only thing that made life tolerable to her before. She missed it terribly for the first two days. Under no conditions would I give any of the coal tar products to any patient undergoing the inoculation treatment. They all seem to exert the same injurious effect upon blood cells. I saw her yesterday, and it is remarkable that within ten days, and after only two inoculations of 5-million doses, she has distinct increase in the range of movement of her distorted fingers.

CASE V.—This was that of a young lady who has suffered signs of commencing rheumatoid arthritis in her knees ever

since the birth of her second child, eighteen months ago. In her case the *diplococcus rheumaticus* was found in a recess behind a wisdom-tooth which had been troubling her for a long time by its tardy and painful eruption. All her teeth are very good, and she does not exhibit any of the usual signs of pyorrhœa alveolaris, but for some reason or other this wisdom-tooth had not been able to come through properly, and the recess between the gum and the tooth has become infected. She is having an autogenous vaccine of *diplococcus rheumaticus*, but too recently to allow one to judge the result as yet.

I have used a stock vaccine, collected from several strains, with considerable success in those painful conditions, described as muscular rheumatism, where, instead of a joint, the aponeurosis of the muscle has been attacked. I have treated several of these cases with this vaccine, because I detected the *diplococcus* in the recesses of the gums, which were usually presenting a greater or less degree of pyorrhœa alveolaris.

In conclusion, it seems that one might with some confidence apply these rule-of-thumb measures, which I have endeavoured to describe, with a reasonable hope of success, and if they fail, the patient need not despair, because I have no doubt that if a careful "stunt" were made, the source of the arthritis would eventually be detected and a corresponding vaccine successfully applied.

It may be complained that I should not have ventured to take up the time of this Society with such bald accounts of cases, and of treatment; cases which have not been tested by time, and are too few in number to deserve the honour of discussion. It is quite true, and I would rather have waited and worked at a greater number before bringing forward my results, but the temptation to revisit my old *Alma Mater* was more than I could resist, and I gladly took advantage of the first chance afforded me of reading an essay before this distinguished medical society. Perhaps a more plausible apology lies in the fact that up till now we have generally regarded rheumatoid arthritis as a most intractable, almost incurable complaint. If my few initial successes stimulate others to test the value of Wright's brilliant methods, on the lines I have indicated, we may get nearer the true solution of the problem.

A discussion followed the reading of Dr. Lyon Smith's

paper, in which Dr. Renton, Dr. Newman, Dr. W. B. Martin, Professor Stockman, and others took part.

Dr. W. B. Martin thought that not all the cases referred to by Dr. Smith came under the description of rheumatoid arthritis. As to the organisms which were regarded as the causal agents, such diplococci were morphologically quite common in the mouth and vagina, and with a view to their identification sugar reactions and animal experiments should have been done in at least one case. Why were the local manifestations not found to contain the organisms? As to oral administration of vaccines, Dr. Martin could see no rational explanation of such procedure doing good.

Professor Stockman questioned whether dead organisms injected into the body actually did produce immunity. Only a few organisms could contain enough toxin, when dead, to produce immunity. Dead staphylococci did some good; dead gonococci also; but no others, in Professor Stockman's experience. Cases of rheumatoid arthritis which recovered under vaccine treatment would recover under other treatment, and all the cases cited by Dr. Smith were under other treatment as well. Ordinary uncomplicated cases should be tried with vaccine treatment without other treatment. The question as to what was true rheumatoid arthritis would be settled only when the organism had been discovered; when discovered it would probably prove to be as specific as the tubercle bacillus.

Dr. Howie asked what particular benefit Dr. Smith expected from the administration of port wine.

Dr. Lyon Smith, in replying, said that experiments in St. Mary's Hospital showed that very moderate quantities of alcohol stimulated phagocytosis. As to the occurrence of organisms in the mouth, Dr. Smith argued that in the case of a patient suffering pain and with organisms in his mouth, if one gave an injection of these organisms and found the pain relieved in a few hours, one was entitled to call it a definite reaction. The pneumococcus was found in almost every mouth, yet no one doubted the causal connection between it and pneumonia. As to the mode of action of the dead bacilli, these when injected stimulated the production of antibodies, which then flavoured the bacilli; the leucocytes did the rest. In promoting this leucocytic action the general treatment was of value. Search was not made locally for the organisms, because the joints were usually dry and painful to aspirate.

IV.—DEMONSTRATION OF SKIAGRAMS.

BY DR. W. F. SOMERVILLE.

Dr. Somerville gave a lantern demonstration of skiagrams illustrative of various medical and surgical conditions.

MEETING V.—16TH NOVEMBER, 1910.

The President, PROFESSOR ROBERT MUIR, in the Chair.

The meeting was held in the Pathological Department of the Western Infirmary, and took the form of a Pathological Demonstration. The specimens were shown on the screen by means of the epidiascope.

I.—SPECIMENS FROM A CASE OF LYMPHADENOMA IN A CHILD, FOLLOWING CONGENITAL SYPHILIS AND TUBERCULOSIS.

BY DR. WM. MACLENNAN.

A boy, aged 8 years, was admitted to Ward I of the Western Infirmary on 20th November, 1909, suffering from general anasarca of several months' duration. His pallor and exhaustion were profound.

Till the completion of his first year he seems to have enjoyed fair health. A little later he became an inmate of a surgical ward in the Western Infirmary for treatment for a widespread disease of the bones. There is no doubt this was tuberculous in character, and many of his joints, as well as some of the long bones, showed the typical scars and depressions of old tuberculous sinuses. One finger had been amputated. He was removed from the infirmary to Ruchill Fever Hospital on contracting whooping-cough. He seems never to have made a complete recovery from this affection, for there is a history of cough and expectoration ever afterwards. He became very pallid, and suffered from attacks of epistaxis and hæmoptysis. Generalised œdema then set in, and his belly became enormously swelled.

On examination these points were made out:—His breathing was very rapid and shallow, and accompanied with râle. He

had a persistent cough with expectoration. There were signs of a general bronchitis, with patches of consolidation—in short, all the signs of an acute broncho-pneumonia.

The examination of the blood showed no distinctive changes in morphology. The count indicated—

Red blood corpuscles,	1,700,000
White blood corpuscles,	9,000
Hæmoglobin,	15 per cent.

The relative leucocytosis was ascribed to the broncho-pneumonia. The drawn blood showed a very defective coagulability.

The temperature on admission was 102° F.

The abdomen was greatly distended—partly due to œdema of the wall, partly to a considerable ascites, but principally to a great enlargement of the liver and spleen. These organs were uniformly enlarged, free from tenderness, and of very firm consistency.

The urine contained practically no albumen, there being only a doubtful haze on boiling. No casts were found.

The bridge of the nose was absent, and the child had “snuffles.”

The teeth were badly developed and decayed, but they were not typically “pegged.”

The child rapidly became unconscious, and died on the day following admission.

The family history is interesting and important in this case. The father was a soldier; said to have had syphilis. The mother had several pregnancies. The two first children died in infancy. There was one miscarriage and several subsequent “floodings.” Two children were reared—one (now the only one living) being deaf, defective, and suffering from a double keratitis, the other the subject of these notes.

The diagnosis of this case presented certain points of difficulty. The prolonged disease of the bone of a tuberculous character, coupled to the no less obvious syphilitic inheritance, seemed to warrant the assumption that probably the child was suffering from advanced amyloid disease. All his symptoms seemed to point in that direction. There was, however, no signs of renal involvement. The absence of albumen did not negative the presence of amyloid disease. Either the prolonged suppuration from the bone disease or the syphilitic taint were sufficient singly to promote the characteristic changes in the organs of amyloid disease.

There were no enlarged glands palpable, and the tonsils were normal. It was considered unlikely that the anæmia and visceral changes could be due to lymphadenoma or Hodgkin's disease. And yet this is what it proved to be.

On opening the abdomen a greatly enlarged spleen and liver were found. On section of these organs certain changes were evident. The liver was palish-brown, and through its substance were seen whitish nodules of about the size of lentils. There was no amyloid reaction. The spleen showed also numerous small nodules or areas of whitish tissue, of a somewhat translucent character, and varying in shape. These were related to the Malpighian bodies, and corresponded to the appearance of lymphadenoma.

The retro-peritoneal glands below the pancreas, and to some extent above, formed a considerable mass; there was also some involvement downwards. There was little involvement of the mesenteric glands proper. In section, the glands showed a pretty dense whitish tissue, of fairly uniform appearance, but those of larger size had a dull yellowish look, although not caseous.

The macroscopic appearances of the organs were not distinctive of lymphadenoma. The disease was recognised by the microscope. No tubercle was found anywhere.

II.—SPECIMENS FROM A CASE IN WHICH CARCINOMA AND TUBERCULOUS DISEASE CO-EXISTED IN THE VERTEBRAL COLUMN.

By DR. R. BARCLAY NESS.

Henry B., aged 29 years, was admitted to the Western Infirmary on 8th October, and died on 1st December, 1910.

The patient stated that he had been in good health up to eight weeks before admission, when he complained of general impairment of health, with pain in several of his joints, which compelled him to take to bed. Some weeks later the weakness and emaciation, which were now accompanied by profuse sweating, became extreme. Immediately before admission he complained of a very persistent dry cough. Nothing of importance in his own past or family history was elicited.

Condition on admission.—Emaciation, cachexia, and pallor, with malar flush, were well marked. Fever was considerable, and of a remittent type. Large joints were painful, but not swollen. Cough was persistent and expectoration scanty, and no tubercle bacilli could be detected. Examination of

the lungs showed the signs of a general bronchial catarrh, most marked at the right base. The pulse was regular in force and rhythm, but soft and rapid. The cardiac dulness was normal and the sounds pure. Examination of the blood gave the following results:—

Hæmoglobin,	45 per cent.
Red blood cells,	2,610,000 per c.mm. (or 53 per cent).
Colour index,	0.9
White blood cells,	12,500 per c.mm.

The tongue was thickly coated, but beyond the presence of anorexia there was no complaint of gastric symptoms. Food was taken without vomiting occurring. Soon after admission there was some diarrhœa, but later on this ceased. The examination of the abdomen revealed no palpable tumour. The liver, spleen, and kidneys were not palpable.

The urine contained a trace of albumen, and gave the diazo reaction; otherwise the characters were normal.

The most prominent features on admission were thus the definite history of only eight weeks' duration, the remittent fever, the marked anæmia and cachectic appearance, the emaciation, and the catarrhal condition of the lungs.

Shortly after admission, swelling of the right testicle occurred, with tenderness and pain. In about a week the swelling began to subside, and at the end of three weeks it was scarcely recognisable. As it diminished it was found to be evidently in the epididymis.

A Widal reaction was tried, and proved negative. The sputum was examined on many occasions for tubercle bacilli, with negative result. Von Pirquet's tuberculin cuti-reaction also proved negative. Further progress was marked by progressive emaciation and the formation of bedsores.

On 1st November there was noticed a slight prominence in the vertebral column in the lumbo-sacral region. There was little or no tenderness, but considerable pain on movement. Dr. Edington saw the patient then, and confirmed the view that spinal caries, possibly of tuberculous origin, was present.

On 10th November a swelling appeared at the site of the manubrium sterni. It evidently involved the substance of the bone which was expanded over it. The overlying skin was red and oedematous. Tenderness was present, but no pain. Dr. Edington again saw the patient, and suggested the resemblance of the swelling to what occurs in secondary cancerous deposit in cases of mammary cancer. The possibility

of a syphilitic infection was negatived by Dr. Cruickshank on doing a Wassermann reaction.

During all this time there were no gastric symptoms beyond impairment of the appetite, and no melæna.

The patient died on 1st December, within two months of his admission. Death was preceded by unconsciousness of about eight hours. Previous to this there had been no cerebral symptoms.

Diagnosis.—The questions of tuberculosis, malignant disease, and syphilis were considered during life. The last was definitely negatived by the absence of the Wassermann reaction. Tuberculosis was not supported by finding tubercle bacilli in the sputum, nor by the von Pirquet cuti-reaction. The clinical evidence, however, was more in favour of a tuberculous than a malignant affection. At the *post-mortem* it was thought that both conditions were present, but histological examination only supported the presence of the one, namely, carcinoma.

The following facts were taken from the *post-mortem* records of the Western Infirmary, the examination having been done by Professor Muir:—

“The body is that of an emaciated man. The spine presents an angular deformity at the level of the eleventh dorsal vertebra. Manubrium sterni is swollen, and its interior destroyed by caries. Disease has extended to body of sternum, and has appeared in left sterno-clavicular joint.

“*Respiratory system.*—Both lungs are adherent over their lower parts. At left apex is found an old tubercular focus. There is no involvement of the glands at the roots of the lungs.

“*Alimentary system.*—Liver is congested, and there is a certain amount of perihepatitis. Stomach presents a large ulcerated mass, with raised and rolled edges, and extending from cardia to pylorus along the lesser curvature, and measuring 4 inches by 2 inches. On the overlying serous surface there was found in the lymphatics a great distribution of miliary tumours. Lymphatic glands around the pancreas are hard, but show no caseous areas. Histologically, the stomach tumour is carcinomatous, and the neighbouring glands are also involved by the tumour. Intestines are normal. The mesentery shows a few small firm nodules.

“*Genito-urinary system.*—The kidneys show early amyloid degeneration of the cortex. In the globus minor of the right epididymis was found a small caseous area.

"Skeleton.—Spine: There is a complete solution of the continuity of the spine at the level of the eleventh dorsal vertebra. At seventh dorsal vertebra there was found a swelling in the front of the spine, and this swelling contained carious bone. On both sides there extended up the spine, to the level of the first dorsal vertebræ, abscess cavities containing thick yellow pus. The following is the condition of the vertebral column in the part excised:—Second to sixth dorsal vertebræ contain nodules of growth of soft reddish material. The third and fifth are extensively destroyed. Seventh dorsal vertebra has a different appearance. It is whitish-yellow throughout, shows areas of carious softening, and the suppuration outside is seen to take origin from an eroded patch on the right side. Eighth dorsal vertebra is extremely destroyed by cancer. Ninth and tenth dorsal vertebræ are slightly affected, but also contain cancer. Eleventh dorsal vertebra is much destroyed and softened. Twelfth dorsal vertebra and first lumbar vertebra are also extensively affected.

"Ribs: Fourth left rib exhibits at its centre a fusiform swelling, 2 inches in length, and due to a tumour growing inside. A similar smaller lesion was found at the angle of the same rib. Smaller nodules were found in second right and first left ribs.

"Skull: On inner table of vault of skull are found three small flat rough tumours, half an inch by half an inch. A small tumour, similar to those on calvarium, is found in the right middle fossa. Into middle fossa, on left side, projects a red rough tumour mass, of the size of a marble, and pressing on the anterior part of the left temporo-sphenoidal lobe. This tumour contains bone."

III.—TWO SPECIMENS OF HYPERNEPHROMA REMOVED BY OPERATION.

BY DR. JAS. H. NICOLL.

1. Margaret N., æt. 70, was admitted to Ward XII of the Western Infirmary on 29th July, 1909, complaining of intermittent hæmaturia and a swelling in the right side of the abdomen of some twelve months' duration.

Exploratory laparotomy, on 4th August, 1909, revealed a large renal tumour. Nephrectomy was performed.

On 7th September the patient was dismissed well.

The tumour forms the specimen which Professor Muir shows.

2. Samuel M., æt. 62, admitted to Ward XI of the Western Infirmary on 10th October, 1910, suffering from persistent diarrhoea, which he attributes to the presence of a large tumour in the left side of the abdomen, which tumour first appeared some seven years previously, and has steadily increased in size from that of a lemon to that of a Rugby football.

Operation, on 24th October, resulted in removal, by abdominal nephrectomy, of the cystic hypernephroma which forms the specimen which Professor Muir shows.

On 14th November the patient was dismissed well.

IV.—DR. J. GALBRAITH CONNAL showed—

1. *Polypi removed from the nasopharynx.*

(a) Large polypus removed from the nasopharynx of a clergyman, who complained of nasal obstruction of two years' duration. The polypus occupied the entire nasopharynx, and was seen to come down below the level of the soft palate.

(b) Large polypus removed from the nasopharynx of a girl, 18 years of age. She complained of obstructed nasal breathing and dulness of hearing in the right ear of six months' duration. On inspection the polypus was seen to come down below the level of the soft palate. It lay more to the right side, and seemed to be attached to the right anterior wall of the nasopharynx.

(c) Large polypus from the nasopharynx of a man, 27 years of age, who complained of obstructed nasal breathing of many years' duration.

(d) and (e) Polypi removed from the nasopharynx of boys, both of whom complained of nasal obstruction.

All these polypi were removed from the nasopharynx by means of a Krause's snare. In the first three cases the polypi were removed through the mouth, and in the last two cases the polypi were removed through the nostrils.

I had an opportunity of seeing most of the patients some time after the removal, and there was no tendency to recurrence.

2. *Cystic enlargement of the middle turbinal (mucocoele of the ethmoid).*

(a) The anterior part of the middle turbinal from the right nostril was shown hollowed out like the finger of a glove. The patient was a lady, 28 years of age, who complained of

nasal obstruction of many years' duration, repeated colds in the head, and headaches, especially to the right side. In explanation of the condition, it was pointed out that in many people, as a normal condition, there is a cell in the bone in the anterior extremity of the middle turbinal body, a cell which discharges into the middle meatus of the nose. This cell may become greatly distended, and may be filled with air, mucus, or pus, and is sometimes spoken of as a mucocele of the ethmoid. The same condition may occur in the lateral mass of the ethmoid. When it occurs in the middle turbinal body it may cause obstructed nasal breathing, and by pressure may cause headaches, often neuralgic in character.

(b) The patient was a lady, 60 years of age, who complained of nasal obstruction of one year's duration, and loss of sense of smell.

3. *Hypertrophied anterior extremity of the middle turbinal bone.*

In this case the bone was solid; there were no air spaces.

4. *Inferior turbinal spurring polypoid, posterior end.*

The patient was a gentleman, 51 years of age, with chronic purulent otitis media in both ears. He complained of obstructed nasal breathing and dulness of hearing in both ears of many years' duration, but becoming worse.

On examining with the nasopharyngeal mirror, the posterior end of the inferior turbinal was seen projecting into the nasopharynx like a large polypus, but it was obviously attached to the inferior turbinal, and this attachment was verified with the probe. It was removed from the right nostril with the wire snare.

5. *Papillomata of the uvula (two specimens).*

The papilloma in each case was attached to the tip of the uvula, and lay projecting downwards. They were discovered in the course of a routine examination of the throat in patients who presented themselves for other complaints. One patient complained of a slight cough, but otherwise they had no pharyngeal symptoms. They had been present for long periods—in one patient for over thirty years, in the other patient for fifteen years—and they were shown as illustrations of the marked tolerance of the pharynx for these growths.

(The report of this Meeting will be continued in our next issue.)

REVIEWS.

"*Salvarsan*" or "606." By W. HARRISON MARTINDALE, Ph.D., F.C.S., and W. WYNN WESTCOTT, M.B., D.P.H. London: H. K. Lewis. 1911.

THIS little book supplies, in a convenient form, a fairly full account of the new synthetic preparation, "606," or dioxy-diamido-arsenobenzol. The work is entirely a compilation, and in no sense a critical examination of the new method of treatment. It is based on no fewer than 130 references to the literature, covering the period 15th March to 15th December, 1910. The aim of the authors is thus stated in the preface, "So far, there has been no complete *résumé* in English dealing with the matter comprehensively. In our attempt to supply one, we have studied the recent reports on the new compound with assiduity, and have provided concise notes which, we think, will assist the reader to understand its chemistry, pharmacy, and therapeutics with a minimum of time and trouble."

After a succinct account of the chemistry of "606," the therapeutic results obtained in syphilis and other diseases are detailed at some length. A large part of the book is taken up with a description of the various methods of administration—intramuscular, subcutaneous, and intravenous—and thereafter follow short paragraphs on untoward results, warnings and after-effects, contraindications, effect on Wassermann's reaction, &c. Special communications from several English authorities are included. The references to an already extensive literature are collected at the end, and are arranged as nearly as possible in chronological order. Several useful tables of equivalents are appended. There is no index, but a very full table of contents practically makes up for this deficiency.

The subject-matter is undoubtedly somewhat ill-digested, and there is considerable overlapping in some of the sections.

Apart from this, the book supplies a distinct want, and may be recommended to all who wish to keep abreast of this new and important development in the treatment of syphilis.

Hints for the General Practitioner in Rhinology and Laryngology. By DR. JOHANN FEIN, Vienna. Translated by J. BOWRING HORGAN, M.B., B.Ch. London: Rebman, Limited.

THIS little book aims at giving to the practitioner a good general knowledge of the importance of diseases of the nose and throat, and those sections devoted to the diseases which may be satisfactorily dealt with by the general practitioner are worked out in detail.

The teaching and technique are of the Vienna school, and those who have had the advantage of a course of study there will welcome the book. The style is perhaps a little dogmatic, but that is probably inevitable in all teaching.

It is well illustrated, and a feature of the illustrations is that not only is the correct technique illustrated, but also wrong methods are shown in contrast.

The book is well written and most moderate in price, and we cordially commend it as worthy of a place in the library of the student and general practitioner.

Diagnostic Methods, Chemical, Bacteriological, and Microscopical. By RALPH W. WEBSTER, M.D., Ph.D. London: Rebman, Limited. 1909.

THE scope of this work is to bring together the generally accepted facts relating to methods of diagnosis best carried out with laboratory aid. The methods selected are intended to suit the requirements of those wishing simple clinical information and also of those demanding more scientific accuracy, and the author is to be commended on the admirable volume which does credit to his object. The book is comprehensive in its matter, while at the same time the individual methods are concise and readily understood.

Besides dealing with the better known subjects of the urine, blood, sputum, gastric contents, and faeces, he finds room for chapters on oral, nasal, aural, and conjunctival secretions, parasites, secretions of the genital organs, secretions of the mammary glands, and transudates and exudates. Following each section there is a list of books of reference on the special subjects treated. There are 201 illustrations, of which 37 are full-page colour drawings.

The whole work is well suited for anyone connected with a hospital or who can find access to a laboratory, and we can cordially recommend it.

Chronicles of Pharmacy. By A. C. WOOTON. In Two Volumes. London: Macmillan & Co., Limited. 1910.

THE study of pharmacy is a very old one, and in these two volumes an attempt has been made to trace the gradual evolution of the knowledge of the use and actions of drugs, from prehistoric days down to the present time. In the preface the author says it was intended simply to trace back to their authors the formulas of the most popular of our medicines and to recall those which have lost their reputation, and that an explanation of the modification of processes and variation of the ingredients of compounds would be useful. He was, however, tempted from this design into various by-paths, and the temptation led to the happiest results, for we have here a most interesting, and in many cases amusing, book, which can be read and enjoyed alike by the chemist and the general practitioner. Unfortunately the author died before the book left the printer's hands.

Myths of pharmacy are first dealt with, and then we have pharmacy in the time of the Pharaohs, and the famous Ebers papyrus is discussed at some length and a facsimile of a portion of this is given. The pharmacy of the Bible and of the Jews and a discussion of the drugs mentioned in the Bible make up the third chapter. In the four chapters following the pharmacy of Hippocrates, of the period from Hippocrates to Galen, Arab pharmacy, from the Arabs to the Europeans, and pharmacy in Great Britain are all discussed in a brief, chatty, interesting way, and human interest is imported by biographical details of many famous pharmacists. Magic and medicine, dogmas and delusions, masters in pharmacy, royal and noble pharmacists, chemical contributions to pharmacy, and medicines from the metals, are the titles of the remaining chapters of vol. i. In vol. ii we have animals in pharmacy, reminiscences of ancient pharmacy, pharmacopœias, Shakespeare's pharmacy, some noted drugs, familiar medicines and some notes of their histories, noted nostrums, poisons in history, pharmacy in the nineteenth century, and names and symbols.

It is obvious, from the headings just quoted, that the book is comprehensive in the number of subjects with which

it deals under the title of chronicles, and of course the chapters vary in interest to the average medical reader. Probably the chapter on pharmacopœias is the poorest in the book. It deals only with the London pharmacopœias, and merely mentions those of Edinburgh and Dublin and the *B.P.s* as having been published at a certain date. Some of the other chapters also strike the reader as hardly doing justice to their heading; for example, in the one on noted drugs, opium is discussed in just over a page. On the other hand, the chapter on pharmacy in the nineteenth century is a model of concise and yet literary treatment of an important subject. To sum up, the book is unequal in its treatment of the various subdivisions of the subject, both in matter and in manner, but, on the whole, is well worth reading by practitioners of medicine as well as by pharmacists.

Gynecological Diagnosis. By WALTER L. BURRAGE, A.M., M.D.Harv. New York and London: D. Appleton & Co. 1910.

IT is difficult to say what popularity a book devoted to diagnosis in a single specialism can or should have with the general practitioner. When so many works are being written in every division and subdivision of medicine and surgery, we should imagine the busy practitioner would prefer to find his text-books on the various specialisms sufficiently full as regards diagnosis to satisfy his wants. To build up a large medical library is an expensive luxury.

The present work is not for the specialist, but "for the benefit of those who have not had an opportunity of studying gynæcology in special hospitals and clinics." We would hope there are now few practitioners who have not had some tuition in clinical gynæcology, as otherwise this book, practical as it is, will be of little aid to the novice. The beginner finds it difficult enough to palpate the normal uterus far less make a diagnosis of abnormal conditions.

For those in general practice, to whom such a work is likely to appeal, the author has succeeded in producing a thoroughly practical text-book, evidently based on extensive clinical and teaching experience.

The first part concerns itself with general considerations, a clear account being given of physical examination, such as is common to all large text-books on gynæcology. As

regards cystoscopic examination, the author seems to have only a reading acquaintance with the electric cystoscope, as he dismisses the subject in two pages, and is not aware that it is usually unnecessary to dilate the female urethra as a preliminary to the introduction of the instrument into the bladder. He, however, devotes much space to Kelly's direct specular method, which he recommends, considering it simpler and easier. Those who have practised electric cystoscopy, with its outstanding advantages over the Kelly method to surgeon and patient, will hold a different opinion.

The major part of the book is devoted to special diagnosis, including diseases of the urinary system, rectum, and mamma, as well as those of the generative organs. Gynæcological affections of infancy and childhood, the menopause, and old age are also included.

The teaching is sound and practical, due prominence being given to important distinctive points in symptomatology and diagnosis, while the table on differential diagnosis will prove useful for quick reference.

Anatomy and pathology are summarised at the beginning of each chapter, but the author assumes that the practitioner has a skilled pathologist or bacteriologist at hand to whom he can send his material for examination and report.

A special feature of the indexing, and one to be commended, is the arranging of the list of illustrations in alphabetical order, so that any special figure or diagram is readily located as to number and page.

As already stated, the book is written for the general practitioner, and to him we can commend it as a reliable guide likely to give him all he wants; but for the specialist it is not full enough, and will not replace a well-known work recently translated.

Diet and the Maximum Duration of Life. By CHARLES REINHARDT, M.D. London: The London Publicity Company, Limited. 1910.

THERE are no very original ideas in this small book. Apparently it is published with the intention of making the public believe that the way to live healthy and long lives is to patronise the sour-milk preparations of a certain firm.

The book is scrappy in its contents and savours too clearly of advertising to be recommended.

Hints on the Feeding and Care of Infants. London: National League for Physical Education and Improvement.

THESE hints and rules on the care and feeding of infants are a concise series of statements of how a healthy infant should be fed and clothed. Things that ought not to be done are emphatically pointed out. The rules are printed on a card, at the price of one penny, and we feel that the wide distribution of such a series of instructions amongst the working classes would be of great advantage to the community.

Mentally Deficient Children: Their Treatment and Training.

Third Edition. By G. E. SHUTTLEWORTH, B.A., M.D., and W. A. POTTS, B.A., M.D. London: H. K. Lewis. 1910.

IN the preparation of a new edition Dr. Shuttleworth has been fortunate in obtaining the co-operation of Dr. Potts, who has had exceptional opportunities of observing the class described, and who was one of the medical investigators appointed by the recent Royal Commission on the Care and Control of the Feeble-minded. In this edition also, a chapter has been added on the medical examination of children requiring special instruction, and there are several new illustrations.

The book is intended both for the medical profession and for others who are interested in the special education of mentally deficient children, as well as for those who are engaged in the training of them. For the sake of the first-named, there is a pathological classification of forms of mental deficiency, but the reader is referred to other text-books for fuller information on the pathology of the condition.

The progress of educational efforts on behalf of the different grades of mentally deficient children is described at length. In dealing with etiology, advantage is taken of the investigations of others, as well as of the writers themselves.

Treatment (general, medical, surgical) and training (educational, industrial, moral) are features of the book to which we draw special attention. In the concluding chapter it is shown that much can be accomplished by careful training, but the need for after-care is emphasised.

There are four appendices, containing a list of institutions

in Great Britain and Ireland for mentally deficient children and adults; the same in America and the Colonies; speaking exercises arranged by Dr. Shuttleworth, and an extensive bibliography.

Within small compass there is a great deal of information, invaluable to those who are interested in the welfare of the mentally deficient child.

Medical Examination of Schools and Scholars. Edited by T. N. KELYNACK, M.D. London: P. S. King & Son. 1910.

To those engaged in the responsible task of examining school children this volume will come as a boon. The object of the work is practical, and the editor has been eminently successful in this respect. The volume represents the experience and views of no less than thirty-six contributors, arranged in thirty-two chapters. The number of contributors certainly adds weight to the work. Specialists only can speak with authority in many departments of the examination of children, and it is a pleasure to find so many distinguished medical men giving of their experience in this volume. The subject of school hygiene is also discussed in its widest relationships, and matters concerning efficient administration and organisation are treated exhaustively. A very important part of the book is its very complete bibliography. The volume is one which can be heartily recommended to those engaged in school work.

Medical Diagnosis: A Manual for Students and Practitioners.

By CHARLES LYMAN GREENE, M.D. Third Edition, Revised. London: Rebman, Limited. 1910.

THE previous editions of this highly practical treatise have been reviewed in this *Journal*, and it is only necessary to say that this edition reaches—if it does, indeed, not exceed—the high standard of the previous ones. The dominant note throughout the book is a practical one, and it can with truth be stated that from this point of view alone the volume deserves a wide circulation. In our review of the last edition, special mention was made of the marginal notes, and this idea is still maintained in the present edition, with great advantage to the reader. The student and practitioner alike cannot do better than have this book for ready reference.

The Extra Pharmacopœia. Fourteenth Edition. Revised by W. H. MARTINDALE and W. W. WESTCOTT. With Supplement, "Organic Analysis Chart." London: H. K. Lewis. 1910.

IN the fourteenth edition the previous high standard of usefulness of this book is fully maintained. A number of new chapters appear, *e.g.*, *acidi lactici bacilli*, organic arsenic compounds, iontophoresis, radium. Many new pharmaceutical and chemical preparations are referred to, and much experimental work in pharmacy has been summarised. The index is very complete, and, as usual, is combined with a posological table. There is little to object to in the book, printing and paper are excellent, and the proof-reading seems to have been very carefully done. Perhaps the only point that might be improved is the binding, which does not seem so substantial as in some former editions. The book is one which no physician or pharmacist can afford to be without.

In the supplement, which is published separately, there are tables by which the characteristic reactions of 319 organic substances can be readily found, and these are followed by a list of corroborative tests. It is stated that the data were practically all obtained by personal trial in the laboratory of W. Harrison Martindale, Ph.D. This book ought to be of great convenience for those who require to identify organic substances of pharmacological importance.

A Practical Guide to the Newer Remedies. By J. M. FORTESCUE-BRICKDALE, M.A., M.D. Oxon. Bristol: John Wright & Sons, Limited. 1910.

THE number of new remedies is legion, and naturally in a practical guide only a small proportion of the more important ones can be dealt with. Patent medicines and secret remedies are not discussed. The large class of drugs from animal sources, including sera and vaccine, is also omitted. The object of the book is stated in the introduction, *viz.*, "To give some account of the properties and dosage of the principal new drugs in each class, and to indicate their relative and collective value as accurately as possible by reference to clinical experience, laboratory experiment, and a study of the literature."

The subject is discussed under eight chapters. Compounds of iodine, bromine, sulphur, arsenic, phosphorus, bismuth, and iron are dealt with in the first two chapters. Then follow two chapters dealing with drugs acting on the intestines, urinary system, and circulation. A chapter is then devoted to hypnotics, another to local and general anæsthetics, and another to antipyretics. The last chapter deals with certain specific remedies for phthisis, acute rheumatism, whooping-cough, gonorrhœa, and functional nervous disorders. The arylarsonates, organic compounds of iron, thiosinamine, adrenin, the cocaine substitutes, guaiacol and cinnamic acid are dealt with much more fully than most of the other drugs.

In a way, the book is disappointing, the author is distinctly pessimistic about most of the drugs he discusses, and one feels that, for the most part, he relies too largely on the published work of others. On the other hand, the work is an attempt, which no doubt will be improved later on, to systematise some of the knowledge now attained of the actions of the newer drugs. The book cannot be recommended quite as a book of reference, but it is interesting, and is well worth perusal by physicians, if only to counteract the laudatory pamphlets of the large druggists.

An Introduction to the Study of Hypnotism. By H. E. WINGFIELD, M.A., M.D., B.C. London: Baillière, Tindall & Cox. 1910.

IN the preface we read that this little work is meant to supply a simple answer to the question, "What is hypnotism?" and to serve, for those who have no knowledge of the subject, as an introduction to the larger works. After a short introduction in which hypnotism is defined, there is a chapter devoted to each of the following:—The subconsciousness, the evidence of its existence and the relationship between primary and secondary consciousness; methods of the induction of hypnotism, and a note on the awakening of the subject; the phenomena of hypnosis, and a description of the stages; other hypnotic phenomena, including hallucinations, post-hypnotic suggestions, negative hallucinations, anæsthesia, &c.; treatment by suggestion, including a list of diseases amenable to it, and an account of the results obtained in typical cases. There is a short concluding chapter on "The case against hypnotism," in which the prohibition by law of sensational

hypnotic shows by unqualified persons is advocated, and the question of criminal suggestion discussed. If, the author says, hypnotism be employed with the same care as is required in the administration of anæsthetics, there can be no valid objection to its use as a remedial agent, and some maladies can often be cured in no other way whatever. The writing is clear and interesting, and is intended for members of the profession only; success and failure in treatment are related with modesty and straightforwardness; there is an index: and altogether the volume is an attractive one, and deserves a wide circulation.

Uric Acid in the Clinic. By ALEXANDER HAIG, M.A., M.D., F.R.C.P., assisted by KENNETH G. HAIG, L.R.C.P. Lond., M.R.C.S. Eng. London: J. & A. Churchill. 1910.

THIS volume is a clinical appendix to the author's well-known work, *Uric Acid as a Factor in the Causation of Disease*, and is really a summary of the cases on which that work is based. If an excess of uric acid in the blood is not the cause of all the ills that flesh is heir to, it is certainly responsible for many conditions of disease, and the view that it is often the starting-point of many diseases of metabolism is now freely admitted. With many of Dr. Haig's views there may be considerable disagreement, but no one can deny the painstaking way in which he has collected his opinions and the thoroughness of his work. For these reasons, if for no other, the book should be widely read.

Lectures on Cosmetic Treatment: A Manual for Practitioners. By DR. EDMUND SAALFELD, of Berlin. Translated by J. F. HALLS DALLY, M.A., M.D., B.C. Cantab., M.R.C.P. Lond. With an Introduction and Notes by P. S. ABRAHAM, M.A., M.D., B.Sc., F.R.C.S.I. London: Rebman, Limited. 1910.

THIS is a book of just under 200 pages, containing the author's lectures delivered in his course of cosmetics. The treatment of such conditions as hypertrichosis, telangiectases, anomalies of sweat secretion, &c., affections so distressing in female patients, is fully discussed. It is a useful little book and well worthy of perusal.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE A. ALLAN, M.B., CH.B.

MEDICINE.

Inversion du Réflexe du Radius. By Doctor Babinski (*Gazette Médicale de Paris*, 11th January, 1911). In the normal condition percussion of the lower end of the radius usually excites a simple flexion of the fore-arm on the arm. When the tendon reflexes of the upper limb are exaggerated, other movements, especially flexion of the fingers, may accompany flexion of the fore-arm. This is usually what takes place in hemiplegia of cerebral origin. But in the healthy individual one never sees, on tapping the lower end of the radius, flexion of the fingers alone. This is what Babinski proposes to call "La inversion du réflexe du radius." He has observed it in lesions of the cervical cord, and never in other affections. He has had no autopsies in such cases, but explains the change in the reflex as follows:—The centre for the reflex of flexion of the fore-arm on the arm is in the fifth cervical segment, while for the reflex of flexion of the fingers the centre is in the eighth cervical segment. Thus a lesion attacking particularly the fifth cervical segment could produce abolition of the reflex of flexion of the fore-arm on the arm without influencing the movements of the fingers. In the same way, if the lesion interrupts the pyramidal tracts, the reflexes of flexion of the fingers become very exaggerated.

Babinski admits, although he has never had a case, that a lesion limited to the peripheral nerves can produce the same phenomena; but if such cases exist, they are probably exceptional.

From his observations he concludes that the inversion of the radial reflex constitutes a sign which by itself almost permits one to diagnose the presence of a lesion in the cervical cord and its position there.

—ARCHD. W. HARRINGTON.

The Clinical Value of the Cammidge Reaction. By Lyell C. Kinney, S.B., M.D. (*American Journal of the Medical Sciences*, December, 1910).—The author has studied the "C" reaction of Cammidge in 154 cases, in all of which abdominal symptoms made it desirable to determine the condition of the pancreas: 34 cases gave a positive reaction. In 105 cases with a negative reaction there was no evidence of disease of the pancreas. A lesion of the pancreas was diagnosed in 15 cases that gave negative findings. Eleven cases of chronic interstitial pancreatitis, 2 cases of carcinoma of the pancreas, and 1 case of acute pancreatitis were included in these. The fifteenth case, a case of cyst of the pancreas, gave a negative reaction before operation; but twenty-one days after, while the rubber drainage-tube was still in place, the reaction was decidedly positive.

In the 34 cases in which the reaction was positive a diagnosis of pancreatic disease was made in 15 cases, or 44 per cent. Of cases examined at operation or autopsy, 22 in which the pancreas was normal to palpation gave 20 negative reactions and 2 positive; 18 cases of chronic interstitial pancreatitis gave 11 negative and 7 positive reactions; 1 case of acute exacerbation of a chronic pancreatitis gave a positive reaction; 1 case of cyst of the pancreas and 1 case of carcinoma gave negative reactions.

The author concludes that the reaction has a very limited value. A

negative result does not indicate that the pancreas is normal, while a positive result is not pathognomonic of pancreatic disease. However, if history, physical examination, and examination of the feces point to the presence of a pancreatic lesion, he considers a positive reaction to be of value in completing the diagnosis.—ARCHD. W. HARRINGTON.

Congenital Heart-block occurring in a Father and Two Children, one an Infant By Z. M. K. Fulton, M.D., Charles F. Judson, A.B., M.D., and George W. Norris, A.B., M.D. (*American Journal of the Medical Sciences*, September, 1910).—The authors describe three cases, with illustrative tracings, of heart-block occurring in a father and two of his children.

The father, aged 41 years, contracted typhoid fever when 20, and suffered from severe dyspepsia afterwards. He was treated for gall-stones from 1895 to 1900. On one occasion, after severe exertion lasting all day, he had general epileptiform convulsions. Attacks of angina pectoris recurred at frequent intervals after the seizure, 1894-1896. At present he is pale, suffers from dyspnoea on exertion, and vertigo on stooping. His arteries show moderate thickening, and the average pulse-rate is 50 per minute. Lues and alcoholism can be excluded. He has worked hard all his life. Tracings show an incomplete block, with a three to one rhythm.

The oldest daughter is aged 20 years, and had pallor in infancy. She has suffered from diphtheria and pertussis, and is subject to nose-bleeding. Menstruation is irregular and painful. She suffers from headache, and loses her wind easily. She does not suffer from vertigo or faintness, and has never had convulsions. The pulse numbers 68 per minute in the sitting posture, 60 lying flat. Tracings show an incomplete heart-block with a two to one rhythm.

The baby, aged 22 months, had pallor from the first, and this became more marked after the sixth month. Intestinal indigestion was evident. The slow pulse was noted during the first week, and varied from 40 to 50 per minute. It was slower during sleep. When about a year old the baby passed successfully through a severe attack of broncho-pneumonia. At that time a loud systolic murmur, with thrill, was present all over the præcordium, and the second pulmonic sound was accentuated. About nine months later only an occasional basal systolic murmur was audible. A month later the murmur was again audible all over, louder and rougher at the base. The pulse numbered 50 per minute, and was full and strong. Exertion does not increase the pulse-rate, nor does belladonna in full doses. Tracings showed apparently a complete heart-block.

The other members of the family—a daughter, aged 14 years, and a son, aged 18 years—gave normal tracings. This daughter suffered for several years from syncopal attacks, which came on while she was at rest. The attacks were followed by severe convulsions, which were thought to be epileptic. She is now quite well, and her pulse-rate is 80 per minute. The authors suggest that, considering the other cases in the family, her attacks were more likely the result of heart-block.

The authors conclude, after fully discussing the cases, that they are dealing with a congenital physiological, and perhaps anatomical, abnormality in the auriculo-ventricular bundle or its blood-supply, by virtue of which conductivity is restored more slowly than normally.—ARCHD. W. HARRINGTON.

[*Note*.—Thos. Lewis, in a letter to the *British Medical Journal*, 11th March, 1911, points out that in no single instance is heart block proved, and in only one of the cases (in which, admittedly, defective curves were obtained) does the account given render its existence the least probable. It is upon this evidence, and not upon the summing up of the authors, that we are called upon to accept or reject the proposition that heart-block may be hereditary. He considers that this proposition must be rejected until far more certain data are supplied.—A. W. H.]

DISEASES OF THE EYE.

Scopomorphin (Scopolamine-morphine) Half-narcosis in Ophthalmology. By E. Zirm, Olmütz (*Wochenschrift für Therapie und Hygien des Auges*, 23rd February, 1911).—The author has employed this method during the last two years in over 120 cases, and regards it as a valuable adjunct to local anæsthesia for anxious or excitable patients, especially with irritable eyes. The well-known disadvantages of a general anæsthetic for eye operations, the apparatus, the upward rotation of the eye-ball, and the after-sickness are all avoided. The patient lies half anæsthetised (twilight sleep), appears to react slightly, and rarely gives expression to pain; does not press, and "after operation he falls into a quiet sleep, awakening several hours later, and often his first question will be, 'When is the operation?'"

Complications are unknown and vomiting is rare. Early in his experience Zirm employed 2 c.cm. for a child of 7 years, and artificial respiration was necessary for half an hour owing to asphyxia.

The combination is found most useful in iridectomies for glaucoma, or for traumatic cases, either early or later (optical), cyclodialysis, paracentesis, complicated cataract operations, enucleation, evisceration, and epithelioma of the lid. If general anæsthesia is required, less anæsthetic is employed, and the patient remains quieter.

Children under 15 years of age, very old wasted patients, and cardiac diseases are contra-indicated.

On the previous evening 1 grm. of veronal is administered, 1.5 to 2 grm. of Riedel's scopomorphin for men, and 1 grm. for women and old patients, is divided into two doses, and the first injected about two hours before the operation and the other half an hour before operation. The patients are kept resting in a slightly darkened room. While the effect is not equal, Zirm states that the procedure is always of advantage.—W. B. INGLIS POLLOCK.

Salvarsan in Ocular Syphilis: Present Results from the Literature and his own Cases. By Dr. Stuelp, Mülheim-Ruhr (author's extracts from his paper at the twenty-sixth meeting of the Rhenish-Westphalian Oculists, in Düsseldorf, on 5th February, 1911, *Wochenschrift für Therapie und Hygien des Auges*, 23rd February, 1911).

I.—Results of salvarsan treatment in eye syphilis, and indications to be drawn from 421 cases.

	Rapid or good results. Percentage.	No result or relapse. Percentage.
Syphilitic disease of eyelid (3 cases),	100	...
" " conjunctiva (8 cases),	63	37
" " cornea (95 cases),	27	73
" " sclerotic (5 cases),	80	20
" " uveal tract (85 cases),	63	37
" " retina, optic nerve (76 cases),	63	37
" " eye muscles (142 caaes),	33	67
" " orbit and trigem. nerve (7 cases),	100	...
In 421 ocular syphilitic affections,	66	34
General syphilitic affections (Plaut),	77	23

Several authors reported very unfavourable results in parenchymatous keratitis, and the tabetic optic nerve atrophy and ocular muscular paralysis, while others were exceedingly optimistic. It would also appear from the

above table that the ocular affections respond less satisfactorily to salvarsan than the other syphilitic diseases.

Thirteen cases of iritis, 3 of choroiditis, 14 of optic neuritis, and 8 cases of ocular muscle paralysis are reported to have appeared in the early stage of syphilis, two to three months after an injection of salvarsan, and when all other secondaries had disappeared. Several of the author's own cases, viz., an iritis, a keratitis, and a retino-choroiditis, showed no improvement or relapsed after a temporary improvement.

Oculists are therefore advised to use salvarsan injections—(1) When a *rapid* effect is desired (primary disease or rapid loss of function): (2) in cases where mercury or iodide are not borne or are without effect.

In all other cases reliance should be placed on the older proved methods.

II.—*What complications may be expected?*

Local complications are infiltrations, necrosis, thrombosis and embolism after intravenous injections, ocular flickerings and swimming before the eyes, scintillating scotoma, transitory amaurosis, ptosis, and glaucomatous increase of pressure: and general complications are fever, vomiting, diarrhoea, polyuria, anuria, tenesmus of bladder or rectum, albuminuria or hæmorrhagic nephritis, diabetes, icterus, &c. It has not been decided yet whether these should be regarded as toxic results, or due to over-sensitiveness of the individual.

In 42 cases death has rapidly followed, but the accident may have been due to accidental complications. Persistent sequelæ have not been observed.

III.—*What contra-indications have so far been recognised?*

A most careful examination should precede an injection of salvarsan, so that none of the following contra-indications may be overlooked:—

1. Optic nerve or retinal diseases of a non syphilitic nature.
2. Neuroses or organic disease of the heart or vascular system.
3. Severe pulmonary affections.
4. Severe nephritis or diabetes of non-specific origin.
5. Severe visceral lues or ulceration of the stomach.
6. Advanced degeneration of the nervous system, or alcoholism.
7. Severe congenital syphilis in the newborn.
8. The specific fevers, or high fevers.
9. Menstruation.
10. Non-specific senile degeneration, marasmus, or cachexia.

—W. B. INGLIS POLLOCK.

The Oculo-Motor Type of Polio-Encephalitis. By Sydney Stephenson, London (*The Ophthalmoscope*, March, 1911).—In a short introduction Stephenson states that it is now generally recognised that there is an acute affection of the grey matter of the brain, first described by Strümpel in 1884, which resembles in all characters the acute anterior poliomyelitis of infancy or infantile paralysis. There may be general symptoms, such as fever, convulsions, drowsiness, stupor, headache, nausea, or coma. The special symptoms depend on the region of the brain which is involved. Pathologically, the two affections of the brain and spinal cord are seen to be in reality one disease. B. Sachs has described cases which he terms polio-encephalomyelitis, in which ptosis, ophthalmoplegia, and pupillary changes have been combined with symptoms referable to the spinal cord.

The author gives an account of 28 cases collected from his own experience, and the following deductions are from them:—Sex does not appear to have any influence. The average age at which the patients were first seen was six and a half years, while the average age of onset was 19·1 months after birth. One half of the cases occurred in the first year. With ordinary concomitant squint Worth found that only 13·7 per cent began in the first twelve months. In more than 50 per cent the squint was preceded by some other disease, which, in several instances, was one of the zymotic ailments.

In over two-thirds of the cases general symptoms did not attract attention. Convulsions occurred in 5 patients, stupor or coma in 2, and torticollis in

1 patient. Any of the extrinsic muscles of the eyeball may be attacked, but in three-quarters of the cases recorded the external rectus was alone affected. Paresis was more frequent than paralysis. The squint is of sudden appearance, and does not get more marked as time proceeds. It may improve or disappear. Older children may complain of diplopia, and a characteristic carriage of the head may be observed. Nystagmus was found in 3 instances. The intrinsic muscles were affected in 1 case. There was no affection of the fifth or seventh nerves.

The diagnosis is difficult when the external rectus is alone affected, as the cases resemble the ordinary convergent squint of childhood. The sudden development should attract attention. Concomitant strabismus is often occasioned at first, and after becoming constant the angle frequently increases. On the other hand, paralytic squint tends to become less. The most certain means of diagnosis is from the observation of the secondary deviation. This can be fairly accurately measured by means of the corneal images obtained by reflected light from the ophthalmoscopic mirror. An upward, downward, or outward squint appearing in infancy could not be so easily mistaken, and would almost certainly be due to an acute infection.

—W. B. INGLIS POLLOCK.

Some Inflammatory Eye Conditions due to Oral Sepsis.

By C. Goulden, Oldham (*The Ophthalmoscope*, March, 1911).—The author gives an account of two cases of irido-cyclitis, one acute and the other a chronic case, in which the regular methods of treatment were without success until carious teeth were removed. In the former, swelling of the knee-joint seemed to indicate rheumatism, but this was probably also due to the oral sepsis, as is more often recognised nowadays. Goulden thinks that many of the cases of chronic uveitis without a definite etiology are due to such conditions, and that a careful examination of the teeth should not be omitted in an obscure case. Power, in a paper on the same subject in 1883, suggested a nervous relationship, but our present bacteriological knowledge allows us to say that it is by the blood-stream that the infection is carried.

—W. B. INGLIS POLLOCK.

DISEASES OF THE EAR.

The Results of Vaccine Therapy in Chronic Suppurative Otitis. By S. W. Nagle, M.D. (*The Laryngoscope*, January, 1911).—Dr. Nagle opened a discussion on the above subject, the paper being founded on forty cases so treated. In six of these, the discharge had been present for several months, and "all had resisted the usual methods of treatment." In thirty-four cases the ears had been discharging from one to forty years. "The bacteria found in the discharges from the ears were staphylococci, a coccus in pairs, a bacillus of the proteus type, an influenza-like bacillus, and a number of other kinds of bacteria which were not classified." The pus employed in making the vaccines was forced out into the aural canal from the Eustachian tube by catheterising, the meatus having been cleansed previously. The discharge was smeared over the surface of the culture tubes, and these tubes were then incubated at a temperature of 37° C. until the growth had nearly reached its height. The time of incubation varied according to the rapidity of the growth of the bacteria. When the height of the growth was reached, it was washed off the surface of the media with normal saline solution under sterile conditions and collected into one tube, which was then sealed with a blow-pipe and subjected to a low temperature. The vaccine was afterwards tested to ensure that it was sterile.

The injections were invariably given in the upper arm, alternating left and right. The best results were obtained by giving the injections at intervals of

three days, and insisting on the regularity of its administration. The opsonic index was not taken in any of the cases, dependence being placed entirely upon clinical symptoms; and no complications or ill-effects had occurred.

In only one case out of the forty "did the vaccine fail to cure the discharge, the cause of failure being unknown."

Subsequent speakers were less enthusiastic, Dr. Holmes, among others, having tried the vaccine method at the City Hospital, using both the stock and the autogenous vaccines, "but without very satisfactory results."

In closing the discussion Dr. Nagle said that much of the success of the method depended upon the preparation of the vaccines, how the bacteria are killed, and upon having an active vaccine. During the vaccine treatment of the cases under discussion, no other treatment, save local cleansing, was made use of.—WALKER DOWNIE.

Otosclerosis. By Gustav Brühl, Berlin (*Archives Internationales de Laryngologie, d'Otologie et de Rhinologie*, September-October, 1910, and January-February, 1911).—It is only during the past few years that this condition has been recognised as an aural disease *sui generis*, yet during that time much research work has been carried out in connection with it. In these two communications, the former made at the Reunion of Otologists, Dresden, 1910, the latter and longer at the Society of Medicine, Berlin, 1910, Brühl gives a most instructive and interesting account of his own work on this question. He has been fortunate enough to obtain for anatomical and histological examination eight petrous bones from patients the subjects of this disease, whose hearing was carefully tested during life, and he gives the results of his study of these cases. Clinically, otosclerosis has nothing to do with inflammatory processes as we know them. It progresses slowly and painlessly, and it is only when the deafness has been fairly marked that the patient becomes aware of it. Anatomically, in a typical case there is osseous ankylosis of the footplate of the stapes to the labyrinthine capsule. This, for a time, was the extent of our knowledge; but as the examination of petrous bones, from patients who had been afflicted with otosclerosis during life, increased in number it was found that in some the changes in the labyrinthine capsule were not always confined to the region of the oval window, and now Brühl, in his communication at Dresden, has described these specimens in which there existed, in parts of the capsule away from the region of the oval window, the bony changes found in otosclerosis, but not now in the usual locality, and *not leading to ankylosis of the stapes*. Moreover, the aural history of these patients was that of the nervous type of deafness, whereas in typical otosclerosis the deafness is of the middle-ear variety. In these three petrous bones there were, too, atrophic changes in the cochlea.

To understand the subject it is necessary to bear in mind the formation of the labyrinthine capsule. From the mucous membrane of the middle ear inwards we have a layer of connective tissue attached to a layer of firm bone, then a layer of bone formed from cartilage, and then the periosteum of the internal ear. In adults one finds in the internal layer of bone numerous islets of non-ossified cartilage in otherwise hard compact bone. It is in connection with these islets that the changes in otosclerosis occur. These are probably brought about by an absorption of bone followed by excessive formation of spongy bone, which is much more vascular than the original bone, and can be easily recognised by its pink colour. Because of this vascularity it is said that in otosclerosis a pink appearance in the region of the oval window can be detected through the membrane on otoscope examination. One has, at anyrate, fancied that this could be discerned. The age of the changes in the bone can be to a certain extent inferred. The condition does not appear to depend on any other diseased state—rheumatism, syphilis, gout, anæmia, &c.

Basing his results on the examination of his specimens, Brühl describes four groups, according as the changes in the bone are situated:—

1. In the immediate neighbourhood of the oval window, but without leading to ankylosis of the stapes.

2. As circumscribed islets in the neighbourhood of the oval window, with ankylosis of the stapes.

3. Over an extended area, with ankylosis of the stapes.

4. Away from the neighbourhood of the oval window, and, of course, without ankylosis of the stapes.

The first three groups are the most common, and are probably stages of the same process, but Brühl is inclined to look upon the last group as a distinct condition with quite a different cause. With cases of this last group the clinical picture, as has been said, is that of deafness of the nervous kind, and, *post-mortem*, atrophic changes are found in the cochlea. Brühl is inclined to look upon the changes in the bone as secondary to the changes in the cochlea and as being of a trophic nature. He discusses the question at some length but is not convincing. We cannot argue much from the changes in the cochlea, as similar changes are got in the later stages of typical otosclerosis, and evidently secondary to it. He is more interesting and more convincing in speaking of the origin of the spongy hyperostosis in the region of the stapes. The bony overgrowth is commonest in that part of the labyrinthine wall which lies above and in front of the oval window. Now, the annular ligament of the stapes is much broader in front than behind, and consequently the excursion of the anterior part of the footplate is greater than of the posterior.

Moreover, the tensor tympani muscle is attached to the anterior part of the oval fossa. Hence, this part of the bone is exposed to the constant fretting of the movements of the stapes, and also to the strain of the contractions of the tensor muscle. Professor Gebhardt, of Halle, is of opinion that these forces account for the greater frequency with which the bony changes occur in the region of the anterior wall of the oval window. Naturally there must be some other condition at work as well, otherwise otosclerosis would be much more frequent than it is.

In the matter of treatment, Brühl has as little faith as most of us in drugs, and in the usual methods of treatment which are of value in the middle-ear conditions. If one could diagnose the case before ankylosis had occurred, say, by the pink appearance of the region of the oval fossa, section of the tensor tendon, by relieving the strain on the labyrinthine wall, might retard the osseous changes. When the ankylosis is established it has been suggested that benefit might be obtained by making an opening in the horizontal canal after the performance of the necessary part of the radical mastoid operation, for it has been found that the hyperostosis does not, as a rule, affect the semicircular canals. Of course, one would have first to assure oneself that the function of the cochlea was intact, and would also require to bear in mind the possibility of causing vertigo. Still, in a suitable case we think, with Brühl, that the suggestion is reasonable.—W. S. SYME.

PATHOLOGY.

On the Delayed Appearance of the Biological Reaction Produced by Hydatid Cysts. By MM. A. Chauffard and Cl. Vincent (*Gazette des Hôpitaux*, 1st March, 1910).—The toxic effects of hydatid disease have now been recognised clinically for some considerable time, but only lately has experimental proof been forthcoming. The two most important biological phenomena in these cases are eosinophilia, and more especially the reaction of Weinberg. The latter is positive in the great majority of cases of hydatid cyst. Exceptionally it may be negative, or may become positive at a late stage. The authors record a case belonging to the last group.

The patient was a man, aged 46, who had great enlargement of the liver. The case was diagnosed as one of hydatid disease, but blood examination

showed the presence of only 2.5 per cent eosinophiles. On 1st February, 1910, Weinberg's reaction was found to be negative, while a control reaction in the case of a patient who had been operated on for hydatid cyst was positive. Various antigens were employed, hydatid fluid from man and from a sheep, and at a later date, hydatid fluid from the patient himself. X-ray examination demonstrated the presence of an effusion on the right side of the chest. On 2nd February this was confirmed by exploratory puncture, and the fluid removed was found to contain hooklets. The patient immediately exhibited a threefold toxic reaction, viz., fever, eosinophilia, and the production of antibodies in the serum. The temperature rose to 40° C. on the second day, and only returned to normal three days later. A blood examination on 6th February showed 20,000 leucocytes, of which 9 per cent were eosinophiles. Finally, Weinberg's reaction, sought for under the same condition as formerly, was found to have become positive; slightly so on 6th February, after the paracentesis; completely on 14th February, after the patient had been operated on. How then were these delayed reactions to be accounted for in a case where the cyst was already of large size, and where the clinical history went back for at least a year? Durand (*Th. de Paris*, July, 1909) suggests two possible explanations—(1) the presence in the serum of inhibitory substances which disappear after operation, or (2) the absorption of a large amount of hydatid fluid at the time of operation, with consequent elaboration of abundant antibody. In this case the exploratory puncture could hardly have caused the disappearance of inhibitory substances from the blood, but it certainly led to a hydatid inoculation, with consequent rapid development of the toxic syndrome.

From the point of view of systemic reaction there are thus three biological types of the disease—(1) complete (eosinophilia *plus* Weinberg's reaction); (2) dissociated (Weinberg's reaction without eosinophilia); (3) latent (absence of both reactions).

In these last, however, it might be said that the toxicity is only latent in that it is local, and no explanation has yet been offered why in certain cases the toxins should spontaneously flood the system, while in others they only transgress the limits of the hydatid membrane after rupture of the cyst.

Lately the doctrine of anaphylaxis has been invoked in explanation of these phenomena. In this view, a positive Weinberg's reaction and an eosinophilia indicate that the patient has become anaphylactic to the hydatid toxins.—MATTHEW J. STEWART.

The Icteric Form of Myeloid Leukæmia. By MM. Leon Tixier and Jean Troiser (*Gazette des Hôpitaux*, 1st February, 1910).—The case here reported was that of a man of 46 years, who, until the onset of his present illness, had always enjoyed good health. There was, however, a history of alcoholic excess, certain of the stigmata of which still remained. About a year before the onset of symptoms he received a blow in the side which fractured several ribs and laid him up for three weeks. The family history was unimportant.

He came to Professor Hutinel's clinique complaining of increasing weakness, with occasional attacks of epistaxis, while inspection showed a slightly icteric tint of the skin and sclerotics. The first and second of these symptoms had been present about a year, the third for about six months. The lower limbs were oedematous, and there was a well-developed collateral circulation over the front and sides of the abdomen. The liver was found to be greatly enlarged, firm, and slightly tender. The enlargement was irregular, involving chiefly the right lobe, but the surface was quite smooth, and the lower border could be palpated with ease. The spleen formed a tumour which descended into the left iliac fossa, reaching almost to the symphysis pubis. It was extremely hard, and a notch could be felt on its inner margin. There was no ascites. Some of the inguinal and axillary glands were as large as almonds. The urine contained urobilin, and the faeces were well-coloured from the presence of stercobilin. There was neither history nor clinical evidence of

syphilis, and Wassermann's reaction was negative. A blood examination confirmed the diagnosis of myeloid leukaemia.

Treatment by radium was at once commenced, but on the seventeenth day the patient was suddenly seized with paralysis of the left arm and leg, speedily followed by loss of consciousness, and death within a few hours. No autopsy was allowed.

A systematic examination of the blood was carried out by the authors. A blood-count made prior to the commencement of radium treatment gave the following figures:—

Red cells,	2,712,000
White cells,	480,000
Hæmoglobin,	90 per cent.

Differential count—

Neutrophile polymorphonuclears,	40·5 per cent.
Eosinophile polymorphonuclears,	1·0 „
Large mononuclears,	4·0 „
Small mononuclears,	10·0 „
Neutrophile myelocytes,	41·5 „
Eosinophile myelocytes,	3·0 „

There were 3 normoblasts to every 100 leucocytes. The cytoplasm of the nucleated red cells was slightly basophile, but otherwise polychromatophilia was exceptional. Considerable variation in size and shape was also present. The resistance to hæmolysis of the red cells was considerably diminished. The serum, however, which was bile-stained, did not appear to possess any special hæmolytic power, and the complement content was normal. The proteolytic power of the blood was very well marked, and a drop placed in contact with solidified serum produced a deep cup in two hours at 52° C. The antitryptic power was also increased.

The diagnosis in this case was quite simple, but there were numerous points of great interest which the authors discuss at some length.

The result of the radium therapy was a fall in the number of leucocytes from 480,000 to 257,000; and while there was a notable *diminution* in size of the spleen (from 32 to 26 cm.), there was an even more striking *increase* in size of the liver (from 28 to 48 cm.) in the nipple line. The authors regard this hepatic enlargement as dependent on two factors, viz., the accumulation in the liver of leucocytic *débris* brought from the spleen, and reactive phenomena consequent thereon.

Hæmorrhages occur with considerable frequency in cases of myeloid leukaemia. In this case there were repeated attacks of epistaxis during the course of the disease, and cerebral hæmorrhage occurred as a terminal event. It is suggested that the intense proteolytic power of the blood in this case may have been an important factor in the genesis of these hæmorrhages by producing an actual digestion of the capillary walls. In this connection it is to be noted that the coagulation time was normal.

The jaundice was clearly of hæmolytic origin, and not dependent on any hepatic disorder. There was no ascites or other evidence of cirrhosis of the liver, and no evidence of biliary retention. On the other hand, lysis of the red cells was produced with great ease, hæmolysis occurring in 0·66 per cent sodium chloride solution, instead of the normal 0·48 per cent.

—MATTHEW J. STEWART.

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- Practical Bacteriology, Blood Work, and Animal Parasitology, including Bacteriological Keys, Zoological Tables, and Explanatory (Clinical Notes, by E. R. Stitt, A.B., Ph.G., M.D. Second edition, revised and enlarged. With 91 illustrations. 1911. (6s. 6d. net.)
- A Text-Book of Gynecological Surgery, by Comyns Berkeley, M.A., M.D., B.C. Cantab., F.R.C.P. Lond., M.R.C.S. Eng., and Victor Bonney, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng., M.R.C.P. Lond. With 392 figures in the text from drawings by Victor Bonney, and 16 coloured plates. London: Cassell & Co., Limited. 1911. (25s. net.)
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- Medical Guide to German, Austrian, and Swiss Watering-Places and Sanatoria. Edited by Harold Morré, M.D. Second edition. London: Kegan Paul, Trench, Trübner & Co., Limited. 1910. (2s. 6d. net.)
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- Golden Rules of Refraction, by Ernest E. Maddox, M.D., F.R.C.S. Edin. Third edition. Bristol: John Wright & Sons, Limited. (1s. net.)
- Practical Lessons in Nursing: Fever-Nursing, by J. C. Wilson, A.M., M.D. Sixth edition, revised and enlarged. Philadelphia and London: J. B. Lippincott Company. 1910. (5s.)
- The Essentials of Materia Medica and Therapeutics for Nurses, by John Foote, M.D. Philadelphia and London: J. B. Lippincott Company. 1910. (4s. 6d. net.)
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- Urine Examination Made Easy, A Plan of Examination, with the Common Tests fully described, by Thomas Carruthers, M.A., M.B., Ch.B. Second edition. London: J. & A. Churchill. 1911. (1s. 6d. net.)
- The Feeble-Minded, A Guide to Study and Practice, by E. B. Sherlock, M.B., B.Sc. Lond., D.P.H.; with an Introductory Note by Sir H. B. Donkin, M.D. Oxon., F.R.C.P. Lond. London: Macmillan & Co., Limited. 1911. (8s. 6d. net.)

**GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR
THE FIVE WEEKS ENDED 25TH MARCH, 1911.**

	WEEK ENDING				
	Feb. 25.	March 4.	March 11.	March 18.	March 25.
Mean temperature, . . .	42·7°	44·5°	41·4°	39·6°	39·1°
Mean range of temperature between highest and lowest,	11·7°	11·3°	11·4°	8·8°	8·2°
Number of days on which rain fell,	7	7	6	4	0
Amount of rainfall, . . ins.	1·86	0·83	0·27	0·15	0·00
Deaths registered, . . .	295	315	269	281	299
Death-rates,	17·2	18·3	15·6	16·3	17·4
Zymotic death-rates, . . .	1·7	1·3	1·5	1·5	1·7
Pulmonary death-rates, . .	5·1	5·3	3·5	4·0	4·3
DEATHS—					
Under 1 year,	52	65	42	53	58
60 years and upwards, . .	81	81	69	76	77
DEATHS FROM—					
Small-pox, . . . . .	...	...	...	...	...
Measles,	1	...	3	2	2
Scarlet fever,	4	3	...	2	1
Diphtheria,	3	4	1	3	4
Whooping-cough,	22	16	19	15	19
{ Fever,	2	1	2	...	1
{ Cerebro-spinal fever, . . .	1	2	...	2	2
Diarrhœa,	4	9	3	5	6
Croup and laryngitis, . .	...	...	...	...	...
Bronchitis, pneumonia, and pleurisy,	68	60	52	49	49
CASES REPORTED—					
Small-pox, . . . . .	...	...	...	...	...
Cerebro-spinal meningitis, .	3	4	5	2	1
Diphtheria and membranous croup,	31	29	31	31	35
Erysipelas,	23	23	22	26	21
Scarlet fever,	60	61	35	40	33
Typhus fever, . . . . .	...	...	...	...	...
Enteric fever,	9	16	5	10	8
Phthisis,	61	41	51	54	39
Puerperal fever,	1	1	1	5	...
Measles,*	36	75	72	107	115

* Measles not notifiable.

THE
GLASGOW MEDICAL JOURNAL.

No. V. MAY, 1911.

ORIGINAL ARTICLES.

ACUTE PNEUMONIA: ITS PROGNOSIS AND
TREATMENT.¹

By G. A. GIBSON, M.D.,
Physician to the Royal Infirmary, Edinburgh.

WHEN looking about for a subject which would be at once interesting and useful, it occurred to me that acute pneumonia would probably be one of the most suitable with which to respond to the kind invitation of your President and Council. The importance of the subject is at once proved by the high place which it occupies in the mortality returns of the Registrars-General. The statistics of deaths in England and Wales for the first nine years of the decade recently ended, furnish the following figures:—

1901,	.	.	22,407	1906,	.	.	24,549
1902,	.	.	27,823	1907,	.	.	25,650
1903,	.	.	23,300	1908,	.	.	22,745
1904,	.	.	23,927	1909,	.	.	26,313
1905,	.	.	25,562				

¹ An address delivered before the Eastern Medical Society of Glasgow, 15th March, 1911.

The Scottish returns for the same period speak with equal significance for the serious nature of the disease:—

1901,	.	.	3,885	1906,	.	.	4,298
1902,	.	.	4,758	1907,	.	.	4,500
1903,	.	.	4,371	1908,	.	.	4,147
1904,	.	.	4,459	1909,	.	.	4,436
1905,	.	.	4,310				

The returns for Ireland tell the same tale with at least as much eloquence. During the last nine years for which the returns are available the figures¹ are:—

1901,	.	.	3,566	1906,	.	.	3,796
1902,	.	.	3,606	1907,	.	.	4,102
1903,	.	.	3,496	1908,	.	.	4,116
1904,	.	.	3,755	1909,	.	.	4,310
1905,	.	.	3,624				

Through the indefatigable industry of Wells,² we have been put in possession of the facts regarding 465,400 cases of pneumonia, yielding 94,826 deaths—that is, a mortality of 20·4 per cent. Of 43,455 cases collected by Musser and Norris,³ there were 21·06 per cent of deaths. According to Beddard,⁴ the mortality in 7,868 cases above the age of 10, admitted to London hospitals in ten years, was 21·8 per cent. In the census returns of the United States for 1900 the death-rate in acute pneumonia under 15 years of age was 27·7 per cent, and above 65 it was 80·5. These facts are stated by Musser and Norris.⁵

The death-rate from pneumonia is not only high, but it is steadily rising; and in the valuable paper by Wells, already referred to, we find abundant proof of this statement. In the Massachusetts General Hospital the annual average death-rate from acute pneumonia, which was 18 per cent in 1822, had risen to 30 per cent in 1903. The returns of the Boston City Hospital show an average mortality of 21 per cent in

¹ The figures which are quoted above are, in part, extracted from the annual reports; but it is a pleasant duty to express my grateful appreciation of the kindness of the Registrars-General and the Superintendents of Statistics for the three divisions of the Kingdom who have been so good as to furnish me with the figures which have not yet been published.

² *Journal of the American Medical Association*, 1904, vol. xliii, p. 866.

³ *A System of Medicine*, edited by William Osler, M.D., London, 1907, vol. ii, p. 625.

⁴ *A System of Medicine*, edited by Sir Clifford Allbutt, K.C.B., and H. D. Rolleston, M.D., 1909, vol. v, p. 232.

⁵ *Op. cit.*, p. 625.

1865, and of 39 per cent in 1903. In the Cincinnati Hospital the mortality rose from 31 per cent in 1866 to 43 per cent in 1903. The Wiener Allgemeines Krankenhaus furnished a mortality of 18 per cent in 1840, and of 27 per cent in 1899; while the Glasgow Royal Infirmary, with a percentage death-rate of only 16 in 1851, had 30 in 1900.

From the statistics of the Edinburgh Royal Infirmary of the last ten years the following facts have been obtained through the kindness of Mr. Scott Craig, Registrar¹:—

Year.	Cases.	Deaths.	Mortality, per cent.
1901,	185	71	38·3
1902,	326	121	37·1
1903,	200	59	29·5
1904,	228	78	34·2
1905,	265	78	29·4
1906,	262	77	29·3
1907,	189	63	33·3
1908,	206	68	33·0
1909,	212	57	26·8
1910,	207	42	20·2
	<hr/> 2,280	<hr/> 714	<hr/> 31·1

It has seemed to me that it will be helpful to give you the statistics of my own wards for the last ten years. During that period 216 patients were admitted suffering from acute croupous pneumonia, 165 of whom were males and 51 females. Of the total number (216), 69 died, equivalent to a mortality of 31·9 per cent. Of the male patients (165 in number), 54 died, giving a mortality of 32·7 per cent; of the female patients (51 in number), 15 died, yielding a mortality of 29·4 per cent.

Of my own fatal cases, 1 only was below 10, and only 5 were above 60 years of age: 18 died within twenty-four hours of admission, several of them having only lived two or three hours after coming in. Ten of the deaths were in patients suffering from acute alcoholism: 2 were puerperal, and of these 1 had been previously under my care on account of a patent arterial duct. Three of the fatal cases had double pneumonia: 2 were complicated by acute pericarditis; 1 had pleurisy with effusion; 1 was a victim of cancer of the lung, and the pneumonia was simply a terminal condition: 1 case

¹ The figures are published in the Annual Reports of the Royal Infirmary, but those of 1910 have not yet appeared.

passed into a general suppuration of the lung. One of the fatal cases was found, on *post-mortem* examination, to have a high degree of fatty infiltration, leading to degenerative changes, of the heart muscle; and a considerable number of the middle-aged had interstitial myocarditis, arterial sclerosis, or interstitial nephritis—some suffered from all these.

Melville Dunlop,¹ in an interesting paper, shows that, of 147 cases of lobar pneumonia treated in his wards, 15 died, giving a mortality of 10·2 per cent. He directs attention to the fact that 45 of these patients were under 2 years of age, and that 12 of them died, yielding a death-rate of 26·6 per cent. Of the remaining 102 cases which were above 2 years of age, only 3 died, giving a mortality of 2·9 per cent.

It is impossible to effect any useful comparison of the results obtained in different hospitals, and even in different wards of the same hospital. Anyone who spends even a few minutes in going over the elaborate statistics collected by Wells² must be struck by this fact. The mortality of the various authors quoted by him varies so enormously as from 0 to 100 per cent.

The consideration of the melancholy statistics which have thus been placed before you may well fill us with gloomy reflections: but are we to sit, as the Irish politician once put it on an important occasion—he must have been of the family of the celebrated Sir Boyle Roche—"with our arms folded and our hands in our pockets"? Are we to emulate the spirit of medicine according to Mephistopheles? Assuredly not. The contemplation of the dismal facts connected with pneumonia would be absolutely futile if it did not lead to some attempts at action. My intention this evening is to bring before you some general and special considerations in regard to the prognosis and treatment of acute pneumonia, in the hope of obtaining information which will be of use to us all.

When we attempt to inquire into the considerations which guide us in forecasting the future of cases of pneumonia, our attention is at once arrested by certain *general facts*. There can be no doubt that, in addition to the *seasonal variations* in the incidence of acute pneumonia, the severity of the disease also fluctuates very considerably—there is, as it were, some *epidemic influence* at work. This does not merely show itself from year to year; it manifests a tendency to the establishment of larger cycles. Again, the *general*

¹ *British Medical Journal*, 1908, vol. ii, p. 367.

² *Loc. cit.*

surroundings have to be taken into account, and, according to the United States census for 1900, quoted by Musser and Norris,¹ the death-rate was highest in the cities (23·3 per cent) and lowest in the rural districts (13·6 per cent).

The factors at work in producing an influence over the prognosis as regards the individual affected naturally arrest our attention before dealing with those arising from the special features of the disease. The question of *race* is not a matter of great importance to us in this country. But in America it constitutes one of the most striking phenomena regarding the disease. According to the census of 1900, the mortality from pneumonia amongst the white races was 184·8 per 100,000 living, while amongst the coloured people it was 349. We find also that in America "the death-rate from pneumonia was excessively high amongst those whose mothers were born in Italy (479·8), particularly in the cities (561·4). Among those whose mothers were born in other countries, the rates were higher among those whose mothers were born in Ireland (257·5), in Hungary and Bohemia (206·6). The rate was lower for the children of mothers born in the United States (142·8) than in any other class, except those whose mothers were born in Canada (132·2)." These facts are given by Musser and Norris.² In respect of mortality according to *sex*, the statistics of Musser and Norris³ showed that of 33,351 cases in males there were 6,449 deaths—a mortality of 19·3; while of 12,927 cases in females there were 3,431 deaths—or 26·9 per cent. This is not to be regarded as a general rule. Many collections of statistics give an inverse ratio to these figures of Musser and Norris, and my own hospital results, already mentioned, give a male mortality of 32·7 per cent, and a female of 29·4. As regards the *age* of the patient, all statistics tell the same tale with monotonous iteration—that in the very young and the very old the death-rate is highest.

The *environment* in which the patient has lived exercises great influence over the course and event of the disease, and, when the general surroundings are satisfactory, the influence of other factors is always, to a certain extent, minimised. Thus it is that the adult, living in a healthy rural district, is much more likely to recover, even from a serious attack of pneumonia, than the town dweller; while the denizen of a city, whose environment is good, is much

¹ *Op. cit.*, p. 625.

² *Op. cit.*, p. 626.

³ *Op. cit.*, p. 625.

more likely to recover than another whose abode is in the slums. It is very largely this fact that renders the mortality amongst our hospital patients so high. The *occupation* of the patient is again a matter of great importance, and it follows from what has just been said as regards the environment that an out-door occupation renders the patient affected by acute pneumonia more likely to recover than an avocation which is pursued in-doors. It need hardly be added that many occupations are carried on in unhealthy surroundings, which also tend to make the outlook less hopeful. Closely allied to the two factors which have just been reviewed are the *habits* of the patient before illness. Exhaustion, whether the result of work or of play: the abuse of alcohol; in short, vice of any kind, is of evil import in prognosis.

It must, nevertheless, be kept in view that these three factors, although closely associated together, frequently cancel each other: and a satisfactory environment, with a healthy occupation, will often minimise the evil influence of bad habits. Some years ago one of my friends, in a beautiful country district, asked me to see a patient with him, and, after our consultation was finished, he told me he would be very glad if I would go with him to see an elderly farmer, very ill with double pneumonia, at the age of 75, in a healthy house on a beautiful hillside. He had previously told me that pneumonia was very common in his district, but that his patients almost invariably recovered. It seemed to me, after examination of the worthy old farmer (who, in the words of Lancisi,¹ had worshipped very frequently at the shrine of Bacchus), that he had a remarkably bad outlook, and my friend concurred with me in thinking that the case would prove an exception to his general rule of recovery. Meeting the doctor (whose name and district wild horses would not drag from me) about a month afterwards, the question naturally arose how it had fared with our old patient, and, to my surprise, the doctor, in a burst of confidence, told me that he had been "as fou as a wheelk" last market day.

The influence of *previous diseases* cannot be overestimated, and those who have been recently debilitated by any previous affections, or who bear the results of older standing diseases, are much less likely to recover than those who have been previously healthy. Affections which have left degenerations of vessels, or of heart, or of kidney, are very likely indeed

¹ *De mortu cordis et aneurysmatibus*, 1740, p. 256.

to succumb to attacks of acute pneumonia. It is rather interesting, in connection with this subject, to bear in mind that previous attacks of pneumonia seem to lessen the mortality. Rychner's¹ mortality in general, among 616 cases, was 25·7 per cent; but amongst those who had previously suffered from one attack it was 22·7 per cent, while amongst those who had passed through more than one attack it was only 18 per cent.

When we turn from the general influences affecting the prognosis in acute pneumonia to the particular facts regarding the extent and severity of the disease, we find a number of important guides. The *distribution* and *extent* of the *lesion* have very considerable influence, and, according to Sears and Larrabee,² the mortality, in respect of extent and distribution, in a large series of cases, was as follows:—

1 lobe, .	31·0 per cent.	4 lobes, .	52·5 per cent.
2 lobes, .	38·2 „	5 „ .	100·0 „
3 „ .	59·0 „		

There can be little cause for wonder that this is the case, as the extent of the lesion and the intensity of the systemic intoxication must be in direct ratio. Amongst the general symptoms of acute pneumonia, the *pulse* and *respiration* have, from time immemorial, been carefully studied in order to forecast the future, and during the second half of last century the condition of the *temperature* has received at least equal attention. It has long been recognised that the prognosis is the worse when the pulse is more frequent and when the respiration is more hurried: and, in modern medicine, a very low or a very high temperature is also of evil import. The following table, carefully compiled by Preble,³ show these facts, and is to us of the greatest interest in this connection:—

PULSE AND MORTALITY.

Under 100, .	3·5 per cent.	Under 140, .	47·0 per cent.
110, .	5·7 „	150, .	59·0 „
120, .	12·6 „	Above 150, .	77·0 „
130, .	21·5 „		

¹ *Centralblatt für die medicinischen Wissenschaften*, 1885, Bd. xxiii, S. 688.

² *St. Paul Medical Journal*, 1902, vol. iv, p. 451.

³ *Journ. Amer. Med. Assoc.*, 1899, vol. xxxiii, p. 441.

RESPIRATION AND MORTALITY.

Under 30, . 7.7 per cent.	Under 60, . 50.4 per cent.
40, . 14.0 ,,	70, . 62.2 ,,
50, . 30.2 ,,	Above 70, . 65.6 ,,

TEMPERATURE AND MORTALITY.

Under 100, . 35.2 per cent.	Under 105, . 26.0 per cent.
102, . 23.1 ,,	106, . 30.5 ,,
103, . 27.4 ,,	Over 106, . 68.0 ,,
104, . 26.7 ,,	

The condition of the *expectoration* furnishes some useful indications. By the number of pneumococci which are present, we may, to some extent, gauge the intensity of the disease. But we may go a step further, as, when other organisms are present, such as streptococci, we know that the case is more severe, and when tubercle bacilli accompany the pneumococci, the outlook is, in general, grave indeed. If the amount of blood which it contains is large, we are more fearful of the future; and when pus is present, we know that something more than an ordinary pneumonic process is at work. It has long been held that when no expectoration is present, the outlook is worse for the patient. We may take leave to disbelieve this, as an absolute rule. Many of the most successful cases which have been under my care have, from first to last, never had any expectoration.

It need hardly be stated that the future is rendered more gloomy when the *digestive system* is impaired: and catarrhal conditions of the mucous membrane, of the alimentary tract, and distension of the hollow viscera frequently give us cause for anxiety.

Lastly, amongst the ordinary considerations which influence our prognosis, is the state of the *nervous system*. Restlessness and sleeplessness invariably influence the patient for evil; while severe headache and wild delirium, speaking eloquently as they do of profound intoxication, arouse justifiable apprehensions.

Before taking up two very special guides to prognosis, let me mention how very commonly a fatal issue is brought about by some complication which may be entirely unexpected. Such *complications* have very different effects upon the mortality: but each one of them increases the tendency to death. The best summary which has come under my

notice is that which is given by Musser and Norris, in the article¹ to which your attention has already been directed.

Complications.	Cases.	Mortality. Per cent.
Jaundice,	344	15·7
Pleural effusion,	700	20·29
Hemiplegia,	105	21·8
Pregnancy,	466	30·0
Chronic endocarditis,	114	32·46
Empyema,	74	39·19
Pulmonary tuberculosis,	215	57·9
Acute arthritis,	52	61·0
Acute pericarditis,	125	64·0
Acute nephritis,	116	65·52
Chronic nephritis,	182	68·29
Acute endocarditis,	36	72·22
Acute meningitis,	33	93·93
Cirrhosis of liver,	5	100·0
Peritonitis,	7	100·0

The two modern subjects of investigation to which your attention is more particularly desired, arise in connection with the study of *arterial pressure* in relation to heart beat, on the one hand, and with the investigation of the *reactions shown by the blood* on the other. In an address which was given by me at the annual meeting of the Sunderland Division of the North of England branch of the British Medical Association in 1907,² the following statement was made:—

“It is undoubtedly true that pneumonia has not such a uniform effect on arterial pressure, as is seen in typhoid fever, and the results of many different observers show extreme variations. It may be stated, as a general rule, that the pressure tends to be a little below normal, with considerable fluctuations throughout the course of the disease. It has been asserted that there is a sudden fall at the period of the crisis; this, however, has certainly been far from common in my experience. A pressure appreciably below the normal in pneumonia is invariably of evil omen, and any considerable fall bodes disaster. When the arterial pressure, expressed in millimetres of mercury, does not fall below the pulse-rate, expressed in beats per minute, the fact may be taken as of excellent augury, while the converse is equally true. From the work of the last few years in my own wards no fact is more certain than this.” The experience of the

¹ *Op. cit.*, p. 625.

² *Edinburgh Medical Journal*, new series, 1908, vol. xxiii, p. 22.

last four years has amply borne out the formula stated in that address.

Last year Gordon,¹ in a valuable paper, pointed out that in fifteen cases of pneumonia studied by him there was not a fatal result when the arterial pressure, in millimetres of mercury, remained above the pulse-rate per minute, and in one case only did recovery take place when the pressure was persistently below the pulse-rate.

More recently, Hare,² of Philadelphia, has emphasised this principle in a very interesting article, in which he embodies his observations upon the subject. Hare points out how important the sphygmomanometer is to the physician in the treatment of acute pneumonia, and how it calls attention to any tendency to circulatory failure, which can be promptly combated.

Amongst my fatal cases the arterial pressure was carefully studied in 28, and in every case, except No. 17, No. 21, and No. 25, the systolic pressure was at a lower level than the pulse-rate. In the first and the last of these three, they were exactly equal—120 of pressure and of rate in No. 17, and 130 of pressure and of rate in No. 25. No. 17 was a very alcoholic man of 40, whose leucocytes only numbered 9,500. He died a few hours after admission. No. 25 was an old man, aged 74, whose leucocytes numbered 10,200, but, by the use of nuclein, were raised to 15,000. In spite of all our exertions, however, a fatal termination occurred. No. 21

¹ *Edinburgh Medical Journal*, new series, 1910, vol. iv, p. 31.

² *Therapeutic Gazette*, 1910, vol. xxxiv, p. 387.

ARTERIAL PRESSURE.

No. of Case.	Systolic Pressure.	Pulse-rate.	No. of Case.	Systolic Pressure.	Pulse-rate.
1	70	160	15	115	150
2	85	120	16	115	160
3	85	138	17	120	120
4	85	152	18	120	140
5	90	140	19	120	148
6	90	154	20	120	150
7	90	156	21	124	110
8	95	160	22	125	164
9	100	114	23	125	135
10	100	120	24	125	145
11	100	126	25	130	130
12	105	136	26	130	152
13	115	140	27	140	148
14	115	144	28	140	158

is the only fatal case in which the arterial pressure was higher than the pulse-rate. The patient was extremely alcoholic, and had a very slight leucocytosis. On the day of admission the number of leucocytes was 10,600, the day following it fell to 9,200, and on the evening of that day he died. A summary of the results is contained in the table on the preceding page.

As has been mentioned already, a number of the gravest cases admitted to the wards could not be thoroughly investigated, and this has prevented the return being more extensive.

As regards the question of arterial pressure and pulse-rate, one or two remarks must be added to what has already been said. Even in favourable cases, there may be a fall of pressure at the crisis of the affection. As a general rule, however, the fall is at once small and brief: in a few hours the pressure rises, at least to the former level, by the balance of the circulation being restored. The only exceptions to the general principles which have been formulated concern the extremes of age. Children have a much lower arterial pressure and a much higher pulse-rate than their seniors, and there may be an apparent discrepancy on this account, unaccompanied by any danger. Dunlop¹ remarks that in children "the rate of the pulse has not the significance it assumes in the adult." Elderly people, on the other hand, are very liable to have a higher pressure and a lower rate of pulse than are found amongst those who are younger; and in such individuals, in spite of the fact that the arterial pressure stands at a higher level than the pulse-rate, there may be imminent danger. The principle, in its exact and narrow sense, is accordingly only applicable to adults in the prime of life. It is probably unnecessary to state that the heart-rate and the pulse-rate are not always the same. If extra systoles should be present, it is always wise to find out if any pulsation of the heart transmits an impulse to the wrist, and if there should be any failure of transmission, the rate should be estimated by auscultating the heart.

The last matter as regards prognosis is concerned with the results obtained by modern methods of *investigating the blood*. It has been known for wellnigh a quarter of a century that in acute pneumonia, as in a number of other infections, there is, as a rule, a considerable increase in the leucocytes. This change is, in the language of the bacteriologists, a positive chemiotaxis: it is the answer of the leucoblastic tissues to the presence of toxæmia. The particular

¹ *Loc. cit.*

leucocytes which are increased in number are the polymorpho-nuclear cells—those, in short, which are known to be concerned in the process of phagocytosis. It seems highly probable that they not merely carry out this process of destruction of bacteria, but that they also furnish the ferments which combat toxic substances: it is believed that they give rise to opsonin and other substances antagonistic to bacteria and their products. From the prognostic point of view, a mild leucocytosis of from 15,000 to 20,000 gives the most hopeful outlook, as such a degree of leucocytosis points to a mild toxæmia, with sufficient powers of reaction. A leucocyte count of from 20,000 to 60,000 causes greater anxiety, as it means a much more serious toxæmia. An absence of leucocytosis, or the presence even of leucopenia, causes the gravest anticipations, as it shows that the patient has not sufficient power of reaction, and that death from toxæmia is very probable. The leucocytosis, when present, varies somewhat from day to day—in fact, even from hour to hour—but its variations do not correspond with the fluctuations of the pulse and of the temperature. The number of the leucocytes falls, sometimes a little before, or, more commonly, immediately after, the crisis; but the diminution occurs more slowly than the fall of the temperature. When no definite crisis occurs, and delay in resolution is present, the leucocytosis usually persists, and passes away slowly with the gradual disappearance of the pulmonary condition. When complications of a suppurative kind occur, an increase in the number of leucocytes follows, and in many cases, when the blood is carefully watched, such a secondary leucocytosis is often of great importance as an aid in diagnosis.

Amongst my fatal 69 cases, the condition as regards the leucocytes, in the 34 instances where the blood was thoroughly examined, is shown in the following table. For the reasons previously stated, it was impossible, in a good many of the moribund cases, to ascertain the state of matters.

No. of Leucocytes.	No. of Cases.	No. of Leucocytes.	No. of Cases.
4,000– 5,000	2	15,000–16,000	2
5,000– 6,000	2	16,000–17,000	1
6,000– 7,000	4	17,000–18,000	2
7,000– 8,000	2	18,000–19,000	2
8,000– 9,000	3	20,000–21,000	2
9,000–10,000	5	22,000–23,000	1
10,000–11,000	2	38,000–39,000	1
11,000–12,000	1	—	—
12,000–13,000	2		34

It is probably unnecessary, in any medical society of this city, to recall the fact that the opsonic index of the blood is determined by a method originally introduced by the brilliant son of the distinguished Professor of Midwifery in the Western University. The matter is one which has aroused much controversy—it is, in fact, still the subject of very lively discussion—and its value cannot, as yet, be regarded as definitely settled. When we use the term opsonin we mean to denote a substance like the agglutinins, lysins, and precipitins, which are believed to have the effect of assisting the phagocytic cells to destroy the bacteria causing any definite infection. There can be no doubt of the fact that certain substances are developed in the blood which produce such effects upon bacteria as to render them more easily destroyed by the phagocytes. This is not the place to enter upon a discussion of the nature and constitution of opsonins; the matter will be found fully discussed in any modern work on bacteriology. The term “opsonic index” means the ratio of the opsonic content of the blood serum of the patient to that of any person in ordinary health. The opsonic content is determined by ascertaining how many bacteria are ingested by one hundred leucocytes in either case. We may therefore state the matter in this way—

$$\text{Opsonic index} = \frac{\text{Opsonic content of given patient}}{\text{Opsonic content of normal person}}$$

The opsonic index in pneumococcal infection is believed by many workers, as is expressed by Allen,¹ to be a more than usually accurate guide to the process of immunisation. The variations of the opsonic index during the course of pneumonia have been carefully studied by Macdonald² and Eyre.³ As a general rule, during the early stages of the disease the index is below normal, but as the crisis approaches there is a sudden increase. In the cases which tend to a fatal issue, there is from the first a progressive fall. In those cases which do not terminate by crisis, and in which the end of the disease is apt to be delayed, there is a gradual rise in the index. There is no definite relation between the leucocyte count, the opsonic index, and the temperature

¹ *Vaccine Therapy*, third edition, 1910, p. 114.

² *Transactions of the Pathological Society of London*, 1906, vol. lvii, p. 45.

³ *Lancet*, 1908, vol. i, p. 539; and *A System of Medicine by Many Writers*, edited by Sir Clifford Allbutt, K.C.B., and H. D. Rolleston, M.D., 1909, vol. v, p. 241.

range in pneumonia; but it is clear from the investigations of Macdonald and Eyre that, just before the crisis, the results of these three methods of observation come more closely into accord. It is too soon to determine whether the opsonic index is a greater guide to prognosis than the study of the temperature, pulse, respiration, the arterial pressure, and the number of the leucocytes, as well as the general condition of the patient, and a great deal of work must still be done before we can feel certain upon the subject.

It is quite unnecessary, on such an occasion as this, to occupy your time with any remarks upon the general principles of *treatment* in such an affection as acute pneumonia. There is, as a matter of fact, no routine treatment or management by rule of thumb which deserves to be commended, and the general principles of treatment applicable to all acute diseases, in respect of rest, ventilation, diet, excretion, and sleep, require to be borne in mind. The employment of a brisk mercurial aperient, at the very outset of the attack, has always seemed to me of great importance, and careful attention to the condition of the digestive organs throughout is absolutely necessary. With these exceptions, cases of pneumonia may frequently be treated without the employment of any drugs. Some of the most complete and rapid recoveries which have ever been under my notice were treated, both in hospital and in private practice, by the Swedish exercises termed the manual treatment, which will be found fully described in the work of Cyriax.¹ The theory of this method of treatment is that the vibration of the thorax, in addition to the stimulation of the skin, relieves the engorged blood-vessels in the lungs, and facilitates resolution. Whether this be so or not, there can be no question that this method of treatment has, even in serious cases, yielded most admirable results.

One of the most essential points in the treatment of pneumonia is to ensure that our patients *sleep* well. In many patients the addition of ammoniacal, alcoholic, or ethereal remedies is sufficient to procure sleep, the alcoholic series being more especially of use in patients who have been accustomed to the moderate use of such substances in daily life. No one in his senses would nowadays venture to assert that any of these remedies is, in the true sense of the word, a stimulant; but from their effects upon the vessels they produce a sense of comfort which is of the greatest importance to patients suffering from serious diseases. We have at our command a

¹ *The Elements of Kellgren's Manual Treatment*, London, 1903, p. 311.

large number of modern hypnotics which are free of all depressing influences—paraldehyde, veronal, trional, chloralamide: for uncomplicated insomnia, any of these drugs may be employed. If there be much restlessness, as well as sleeplessness, bromide of ammonium, or bromide of calcium may be added. In some cases, the use of codeine is most helpful, and even morphine may be employed without any danger. Just as morphine is one of our most valuable remedies in many cardiac conditions, as was first emphasised by Allbutt,¹ so it is of the greatest utility in certain cases of acute pneumonia.

A tendency to *heart failure* constitutes one of the gravest risks which beset the patient suffering from pneumonia. How we are to discover the danger lurking in front of the sufferer has already been told in discussing the ratio of arterial pressure and pulse-rate. Any irregularity or inequality of rhythm, and any change in the integrity and intensity of the heart sounds, must also be our guide. We must recognise that the resistance in the arterioles may be too high, or too low. The former is much less common than the latter. But it occasionally happens that we encounter cases in which there is *high arterial pressure*, laying a heavy burden upon the left side of the heart. This is particularly the case in middle-aged people, with faulty metabolism, and it constitutes one of the most serious risks which they run. In such cases, whatever means have been adopted for the general condition, it is necessary to employ the nitrites—nitro-glycerine in the form of tablets, or the 1 per cent alcoholic solution, or nitrite of sodium, or erythrol tetranitrate, according as we wish rapid or prolonged effects. Some of our patients, manifesting such symptoms as are now occupying our attention, are materially assisted by the addition of one or other of the iodine series. Of these remedies, probably iodide of sodium in such conditions is the best.

It is far more common to find the *arterial pressure tending to fall below the normal*, whether on account of vasomotor paralysis, or of cardiac failure—more commonly the former. When there are any symptoms raising apprehension, we must be ready to employ digitalis, or strophanthus, according to circumstances. A careful consideration of a long series of cases leads me unhesitatingly to prefer the former of these two drugs, except in the case of elderly people, when strophanthus seems to me more useful. The question has often been raised whether, in cases where the tissues of the heart have been poisoned by general toxæmia, any cardiac

¹ *Practitioner*, 1869, vol. iii, p. 342.

drug can have a good effect. The matter is purely one of degree. In most cases, the extent of the toxæmia has not so deeply affected the heart as to make it impossible that such drugs can act upon it: yet we have to confess quite frankly that, in the worst cases of pneumococcal poisoning, the heart absolutely fails to respond, and we have not infrequently to stand by sorrowfully, recognising that such drugs are impotent. When we employ digitalis or strophanthus, and especially the former of these two, it is well to combine with either of them a vaso-dilator—aromatic spirit of ammonia; spirit of nitrous ether: or the alcoholic solution of nitroglycerine. By such means we prevent the vaso-constrictor action, whether of digitalis or of strophanthus, causing too much stress of the heart.

If, from cyanosis and dyspnœa, it is evident that the right heart is labouring heavily, we may require to give it relief by general venesection. In certain instances of the affection, manifesting this particular phase of the disease, great good has, in my experience, followed the employment of this method of treatment.

In such cases, the free use of oxygen, by inhalation, is certainly advantageous. It has been known, theoretically, for a long time that the ordinary atmosphere of a well-ventilated apartment contains at least sufficient oxygen for all possible requirements. Nevertheless, all experience is in favour of the extreme advantage of supersaturating the atmosphere around grave cases of pneumonia with oxygen. My belief in the efficacy of the free administration of oxygen has been considerably strengthened by the remarkable results obtained by Haldane and Poulton,¹ and by Douglas and Haldane,² in cases of Cheyne-Stokes breathing, treated by excessive oxygenation. Their results have taught us that the respiratory condition may be induced to respond in a wonderful way to varying dosage of oxygen, and their investigations are borne out in a remarkable manner by the gratifying effects which we see in the condition of our cases of pneumonia when treated by the free administration of oxygen.

When there is any tendency to *general prostration*, with *nervous exhaustion*, no remedy appears to me to equal strychnine, administered hypodermically. This belief is, admittedly, not shared by everyone, and one at least of my own Edinburgh colleagues entirely objects to the use of

¹ *Journal of Physiology*, 1908, vol. xxxvii, p. 390.

² *Ibid.*, 1909, vol. xxxviii, p. 401.

strychnine in pneumonia. The overwhelming consensus of opinion is nevertheless in favour of strychnine when there is a tendency to nervous exhaustion and respiratory failure. In a considerable number of instances, the combination of strychnine with codeine, administered subcutaneously, is very helpful indeed. This has been particularly remarked by me in middle-aged and elderly people. A considerable number of such patients have slept peacefully through the entire week of the illness, and have wakened up at the end of that period perfectly convalescent.

In cases where the *leucocytosis* is either *insufficient*, or fails altogether to make its appearance, we are now fortunately in possession of certain measures of real utility. Until recent years, we have had to depend upon the hypodermic injection of substances such as nuclein. For a considerable number of years nuclein has been in frequent employment, both in my own wards and in my own private practice. Its subcutaneous employment is almost invariably followed by a considerable increase in the number of leucocytes, and this has usually led to improvement in the general condition of the patients in whose cases it has been used. The effects are transient, and the administration requires to be repeated at intervals according to circumstances. Although rather uncertain in its action there can be no doubt that the effects of nuclein are beneficial, and it is my belief that a good many patients who would not otherwise have recovered, are now, not merely alive, but perfectly well, simply on account of the addition of nuclein to the other measures which have been employed.

The introduction of fresh serum, obtained from the horse, undoubtedly increases the number of the leucocytes in the blood; but whether it increases the antitoxic influence of the blood of the patient remains to be seen. Nevertheless, in many cases, improvement does follow the use of simple serum, and it is one of the measures which appears to me worthy of fuller trial than has yet been made of it.

Quite recently, Alexander has brought forward the use of leucocytic extract in infective processes. In an interesting paper¹ he has pointed out that the methods of Petterson, Hiss, and Zinsser furnish a means for combating toxæmia. The leucocytic extract is obtained by injecting a sterile irritant into the pleural cavity of a rabbit, and, after killing the animal, obtaining the exudate resulting from the irritation. The fluid is of a pale yellow tint, with a flocculent haze of leucocytes. The exudate is placed in sterile centrifuge tubes

¹ *British Medical Journal*, 1911, vol. i, p.

and treated until a thick grey deposit of leucocytes is thrown down. The fluid is then carefully removed by means of the pipette. Distilled sterile water is then added to the leucocytes, which are thoroughly mixed up in it. The tubes are then sterilised in an incubator at 37° C. for at least four hours. Each tube is then tested for sterility, and, if sterile, the contents are mixed and kept in the ice-chest until required. The amount of leucocytic extract employed is usually 10 c.c. for a dose, and it may be repeated every two or three days. It is too soon as yet to estimate the results of this method, but there can be no doubt that it holds out hopes of benefit.

Above all present systems of treatment now in our hands, we have modern methods of vaccination. A good many years ago, some of the pneumonic patients under my care were treated by the administration of the defibrinated blood of patients who had just recovered from acute pneumonia, obtained with the most careful aseptic precautions. This method was adopted in accordance with the belief that the blood must contain some substance antagonistic to the organisms or toxins of the disease. As might have been expected, but little could be made out in the way of definite effect, as the method employed was eminently crude. In recent years, various sera, containing vaccines of dead pneumococci, have been employed. They undoubtedly produce considerable benefit in acute pneumonia: but they are far more efficacious in instances of unresolved pneumonia and in various pneumococcal infections of other parts of the body than in acute pneumonia itself. The influence of such stock sera is by no means equal to the effects of vaccines made from the patient's own micro-organisms. But the trouble is that, in a very large number of cases, the disease is so severe and the course so rapid, that there is scarcely time to obtain a vaccine. So far as the facts at present obtained are able to guide us, we must conclude that in vaccination lies the chief hope for reducing the mortality of pneumonia in the future. An excellent summary of our present knowledge of vaccine therapy in pneumonia will be found in the work of Allen¹ previously referred to.

In cases where there is severe toxæmia and great leucocytosis, much may be done by the employment of quinine. In several instances of this kind—in which the patients had even reached a stage of profound coma, with complete relaxation of the sphincters, and every evidence of imminent danger—the hypodermic use of quinine has produced the most remarkable effects. The best preparation for this

¹ *Op. cit.*, p. 114.

purpose is the acid hydrochloride, which is extremely soluble, and which may be administered hypodermically in doses of 2 grains every two hours, or every hour. No more gratifying results have ever occurred in my own hands than from this method of treatment.

In concluding these remarks upon the prognosis and treatment of acute pneumonia, it is scarcely necessary for me to emphasise the point that there is really no one routine method of treatment for this disease. Each individual case must be carefully studied, and must be managed in accordance with the conditions which it presents. It may, perhaps, seem strange to some of you, who have done me the honour of coming here to-night, that no reference has been made to the employment of external applications in acute pneumonia. Such methods of treatment do not, as a general rule, commend themselves to us in modern times. They, perhaps, appeal less to me than to the majority of my contemporaries. When a victim, on a certain trying occasion, of an entire jacket poultice around the chest, my mind was at once made up that never in my life would any patient of mine be subjected to the misery produced by the excessive enthusiasm of the kindly man who insisted upon the hot cuirass. It must be admitted, however, that when there is pain, due to any pleurisy accompanying acute pneumonia, external applications of heat are extremely soothing. It is better, under such circumstances, to employ small poultices, and change them frequently, than to envelop the patient in an extensive application. In certain cases of early acute pneumonia, in strong, robust individuals, the employment of cold, either in the form of the icebag or the cold water coil, will be found decidedly beneficial; and, lastly, when there is a high degree of pyrexia (and, still more, hyperpyrexia), the use of sponging and the wet pack—and even the cold bath—may be absolutely necessary.

ENUCLEATION OF THE TONSIL FOR CHRONIC DISEASE.¹

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IN a characteristic manner our American *confrères* have brushed aside the difficulties that arise in connection with this subject, and to the question, when should the tonsil be enucleated, answer always, "The tonsil is of no use, therefore remove it completely." However, already many are wondering if this is not too sweeping, and they are coming back to the attitude which the more conservative Britisher adopts in the beginning. We want to know why and what risk there is; moreover, we have an inborn regard for the habits of antiquity, which we know from the writings of that great American, Mark Twain, is not an inheritance of the United States citizen.

In considering the surgery of the tonsil there are certain more or less elementary details which we must bear in mind. The gland lies between the palatine pillars, its deep surface enclosed in a capsule which rests on the sheath of the superior constrictor muscle of the pharynx. The connection between the capsule and the muscle is very loose except at the lower part where the vessels pierce the capsule. At this point, called the hilum, some fibres of the muscle are incorporated in the covering of the tonsil. From the free surface, channels or crypts pass right down to the capsule. These crypts are lined by columnar epithelium, which rests on a very thin network of fibrous tissue which surrounds the loose lymphoid structure of which the main part of the gland is composed. Numerous lymphatic channels take their rise in the tonsillar substance, and these, it has been found by von Lénard, are in free communication with the lymphatics of the nose and with those of the opposite tonsil, and it is probable, also with those of the lining of the mouth generally. The clinical importance of these lymphatic connections is evident. Of equal importance is the connection between these lymphatics and the glands of the neck. While ordinarily they pass into the upper gland of the jugular chain, it seems, from the results of

¹ Read before the Medico-Chirurgical Society of Glasgow on 21st October, 1910.

the observation of some workers, that there is at times a very free connection with the glands around the large vessels at the root of the neck and with the bronchial glands. When we come to speak of tubercular affection of the tonsil, we shall recognise the value of the work done, for instance, by Grober in this relation. By experiments he showed that colouring matter injected into the tonsil quickly found its way into all the glands of the neck, into the bronchial glands, and also into the connective tissue in the region of the apex of the lung. Much diversity of opinion exists in regard to this matter, and it would seem to be a subject very worthy of research. Much has been written of the peritonsillar fossa, probably more than it deserves. From its position it forms a convenient lodging-place for particles of food, and so becomes a point for the infection of the tonsil, and through the tonsil of the peritonsillar region. In this way quinsy often arises, though, of course, the infection may pass through any other part of the gland. Occasionally, from a developmental defect, this fossa extends for a distance up into the palate.

The exact physiology of the tonsil is still undetermined, but the most reasonable view is that which looks upon it as a modified lymph gland. With the other lymphoid tissue at the opening of the pharynx it forms what is known as Waldeyer's ring, which acts as a first line of defence against the invasion of the body by germs by way of the mouth and nose. By its lymphatic connections with the nose and mouth it acts also as an ordinary lymphatic gland, in proof of which one would point to the frequency with which it becomes active after operations on the nose. Its own special function is probably to wage war against invading organisms and *débris* generally by means of leucocytes, which pass into the crypts through the spaces which exist between the epithelial cells. How strong the protective power of Waldeyer's ring is it is difficult to say. It is, of course, more active in childhood, and from the frequency with which it becomes hypertrophied one can conclude at anyrate that it is quickly responsive and that the warfare is fierce. On the other hand, it is contended that the child suffers no ill effect from the removal of the tonsil, though it may be that this has been too much taken for granted, the conclusion being drawn from the improvement in health following the removal of what was considered a diseased structure. On the other hand, it can equally well be argued that deterioration in the child's health occurs when the tonsil is diseased, but here again

whether due to the loss of function or to the presence of the disease would be difficult to prove. Placed as it is, and active as it shows itself to be, it would seem right to conclude that this lymphatic tissue does fulfil an important function as long as it retains its functioning properties, an important qualification. Acute follicular tonsillitis is very generally considered to be in many cases a rheumatic manifestation. The relief obtained by the use of salicylate of soda is only comparable to that got in acute rheumatic fever. It seems a fair inference that in some of these cases at anyrate the tonsillar reaction has prevented an articular attack.

In the various infectious diseases to which children are particularly prone we commonly get affections of the faucial and pharyngeal tonsils. While therefore it would be wrong to state that the tonsil has no protective function, we cannot, I think, concede that this function is very great, as it gives out so often, though we must recognise that "we know not what's resisted." Like the pharyngeal tonsil, the faucial tonsil tends to undergo retrogressive changes at puberty.

As Grober, Goodall, Wright, and others have shown, when particles of food or micro-organisms pass into the crypts they traverse the channels and reach the deepest portion. Here they are removed by the leucocytes as long as the tonsil remains sufficiently active. When the protective power of the gland is overcome we get a collection of *débris*, and germs, it may be, at first in the deeper parts, and then filling the tubules, when it appears as cheesy material at the orifices. Changes occur in the tonsil itself, the stroma is increased, the columnar epithelium and the lymphoid elements are destroyed. As a general rule, the result is one of hypertrophy, but this by no means always occurs. Many diseased tonsils are little if at all larger than normal, and this is said to be specially the case with tonsils in which the tubercle bacillus is found. That the function of the gland is gone is shown by the deterioration in the health of the patient, and oftentimes by enlargement of the adjacent lymphatic glands. From the putrefactive changes of the crypts we get foul breath, coated tongue, and so on. Various organisms have been found in these tonsils, but of these the greatest interest attaches to the presence of the tubercle bacillus. The proportion of tubercular to the whole of diseased tonsils has been variously estimated. Milligan puts it at 15 per cent, from an examination of a number of tonsils microscopically and by inoculation. Jonathan Wright, from the examination of a large number, says that if the finding of the tubercle bacillus is

necessary to decide the tubercular nature of the tonsillar condition, then 5 to 10 per cent appears exaggerated; but if he were to base his conclusions on what he considers to be pathological processes caused by the tubercular bacillus, then the proportion would be undoubtedly much above this figure. When we recognise the prolonged search required often to find the tubercle bacillus, we can look upon Wright as practically confirming Milligan's figures, though the proportion is much larger than most workers in this field have found. There is this to be remembered, however, Milligan is a convinced supporter of enucleation, and so his researches would be made with tonsils of which the deeper portions could be examined. Many other observers base their statistics on the examination of tonsils removed by tonsillotomy. This is suggestive in more ways than one. Even acknowledging a smaller proportion, we must be impressed by the gravity of the question, the more so if it can be shown that there is in many cases a free communication between the lymphatics of the tonsil and the connective tissue at the apex of the lungs and with the bronchial glands, to which reference has already been made.

We are now in a better position to discuss the question, "When is complete removal of the tonsil called for?" Like many other problems in surgery this resolves itself into a matter of accurate diagnosis. I am convinced there has been too much rough and ready surgery in connection with this organ. It has practically amounted to this, if you can get a bit off the tonsil, take it: and the corollary, if you cannot do so, the tonsil doesn't require to be touched. Both rules are unsound. While it is unscientific and unsurgical to only partially remove a totally diseased gland, it is equally wrong to remove a gland which still retains, or is likely to recover, its functional activities. Can we differentiate between these two? I am afraid we must confess that at present it is in many cases impossible to affirm this. Should all tonsils which extend beyond the pillars be enucleated, and should embedded tonsils, those which remain within the pillars, be left? This certainly cannot be laid down as a hard and fast rule. When they are so much enlarged as to cause definite obstruction, it cannot be doubted, I think, that they are at the same time so much diseased that their function is entirely lost, and both for this reason and because of the diseased condition they should be completely removed. In other cases, however, where the enlargement is only of very moderate amount, where the tonsil retains its pink and

healthy appearance, and where there is no exudation from the crypts, where, in fact, it appears that its function is active or only temporarily in abeyance and actual disease is not present, it seems to me the proper course is to leave it. Would a surgeon advise removal of lymphatic glands for a small degree of enlargement? I do not think so. In fact, it is well known that treatment other than surgical proves beneficial in many such cases. Contributory causes should be dealt with, adenoids removed, a rhinitis treated, carious teeth extracted, as well as attention given to the general health. I am aware that I am advocating what many may consider a new departure, and perhaps an unnecessary attachment to the tonsil and its function, but it will be found in many cases, though I would not say in a large proportion, that the gland will return to its normal dimensions.

The flat or embedded tonsil deserves special attention. In health the tonsil remains within the pillars, is pink in appearance, and its surface is clean. But it is not unusual to find tonsils not much if at all enlarged, but pale or grey in appearance, and the surface dirty, with purulent or cheesy material exuding from the crypts. With many such tonsils it will be found that there is an enlarged gland at the angle of the jaw. Often, too, the child's health is bad. Looking to the aspect of the child, one is sometimes surprised to find that the tonsil is not markedly hypertrophied. It is said, and probably with a good deal of truth, that of such tonsils a large proportion are tubercular. There can be no question that for these tonsils the only operation is enucleation.

Now we come to a question about which there is still much difference of opinion. Are there any tonsils for which the operation of tonsillotomy as opposed to tonsillectomy is advisable? From the pathological study, and looking at the tonsil as a lymphatic gland, to be consistent one must answer this question in the negative. I do not suppose anyone would contend that it is ever admissible to leave behind part of a diseased lymphatic gland, and yet one cannot be blind to the fact that many cases in which the partial operation on the tonsil has been carried out do very well and have no recurrence. No doubt many of these tonsils might very well have been left, in others practical enucleation has been accomplished by the tonsillotome, while in others probably the disease was so little active that the inflammatory reaction caused by the operation has been sufficient to destroy the organisms present. In a fair proportion of cases, however,

it will be found, if the patient is observed over a sufficiently long period, that recurrence of the tonsillar trouble does take place. We are all, I think, agreed as to this. In a few cases tonsillotomy is directly followed by severe inflammatory reaction on the part of the remains of the gland. That this operation is not as satisfactory as one could wish is shown by the various changes and improvements in the instruments—tonsillotomes—employed, all in an endeavour to get more and more of the tonsil away. One surgeon prefers a spade guillotine, another a ring pattern, while a very general opinion is that the blade used should be as small as possible so as to be inserted between the pillars. To make the operation more radical, punches have been added. Moreover, practically all are agreed that the enlarged pharyngeal tonsil adenoids should be thoroughly removed. Formerly the faucial tonsil was more or less completely extirpated by the knife, then the tonsillotome was introduced, and we were captivated by the ease with which it could be manipulated. Now I am afraid we are suffering from the obsession of the guillotine. As has been remarked, and as the work of many has shown, the deep portion of the tonsil is the part most likely to be diseased. It follows, therefore, that if we decide that the tonsil should be operated on, that is, if it appears to be so diseased that its function cannot be restored by simple methods, it should be completely removed. No doubt to arrive at an exact diagnosis should be our aim, and to this end experience will be very necessary. It is said that tubercular tonsils, for instance, are much paler than normal, the anterior pillar is congested, and frequently the glands at the angle of the jaw are enlarged. Jonathan Wright found the bacillus in 72 per cent of tonsils clinically thought to be tubercular. Observations of the temperature for a few days would be helpful.

The operation of enucleation is by no means a formidable one. Too much has been made both of the difficulties and of the risks. Many methods are described. We all know that occasionally in ordinary tonsillotomy the tonsil comes away complete with its capsule. To make this result more probable some use forceps to draw the tonsil towards the middle line. With this, again, one can only look for a probable enucleation, though with tonsils more or less pedunculated this can be confidently anticipated. To make the result definite, it is necessary to separate the capsule from the sheath of the superior constrictor by dissection with the finger or with a sharp or blunt elevator. Towards the lower

part the hilum is encountered, and a good deal of force is required to separate the gland at this point. Scissors may be used for this purpose, or the tonsil may be drawn through the guillotine or through a snare and so removed. Some operators draw the tongue forward by a thread passed through its tip or by some other means. Personally I do not find this necessary. Perhaps I may be allowed to describe in some detail the method of operation I am in the habit of using. Broad-toothed forceps are passed through the loop of a snare, the tonsil is then grasped in its long axis and drawn toward the middle line. With a fairly sharp elevator the anterior pillar is separated from the gland at the upper and outer angle, and the white capsule appears. The elevator is then swept round the top of the tonsil, and the attachment to the posterior pillar is severed right to the lower part. The same is then done for the whole of the anterior pillar down to the base of the tongue, and the deeper portion of the capsule is similarly dealt with till the resisting hilum is encountered. The loop of the snare is then passed over the tonsil and the separation is completed. The hæmorrhage is controlled by pressure with a swab on a holder. Ordinarily a couple of minutes is quite sufficient to enucleate both tonsils. For children, chloroform anæsthesia is the most satisfactory, and the use of a Junker's inhaler allows more leisure, but I have used ethyl chloride for the purpose.¹ It has been brought forward as an objection to the operation that the depth of anæsthesia required is an increased risk, and I held this opinion myself, but I don't now find that very deep anæsthesia is necessary, and to those who are in the habit of using chloroform for tonsil-lotomy this objection need offer no obstacle. In adults, local anæsthesia can be employed. Formerly I used 1 to 2 per cent cocaine with adrenalin injected into the pillars and into the tonsil, but it has seemed to me, and others have found the same, I know, that the addition of adrenalin increases the risk of reactionary hæmorrhage, though it undoubtedly diminishes the danger of cocaine poisoning. Now I use a 2 per cent solution of novocaine, or preferably alypin, at the same time swabbing the surface with 10 per cent cocaine. The operation thus performed is not wholly free from pain: it seems impossible to quite abolish the dragging sensation.

¹ I now commonly use chloride of ethyl anæsthesia, and after passing the snare round the tonsil I draw it tight, and leave it till the other tonsil has been dealt with. In this way one is not hindered by hæmorrhage from the tonsil first removed.

For this reason some recommend general anæsthesia even in adults.

What are the risks of the operation? Hæmorrhage has always been held up as a bogey, and the fear of the carotid has mesmerised some. A glance at the anatomy of the region will convince anyone that it would be almost impossible even with culpable carelessness to wound this vessel, and with ordinary care and working as one should always toward the tonsil this contingency is quite out of the question. As a matter of fact, there is little if any difference between the amount of blood lost in this and in ordinary tonsillotomy. Sometimes the tonsillar artery spouts. If necessary it can be caught up with forceps and tied. Reactionary hæmorrhage sometimes comes on three or four hours after the operation. In one or two such cases with which I have had to deal simple measures have sufficed to check it, but failing with these it would not be difficult to draw the two pillars together with a suture. Late hæmorrhage occurring after an interval of some days has been described, but I have no personal knowledge of it.

Laceration of the pillars is a possibility which, however, becomes less and less so as the dexterity of the operator improves. Good light, good anæsthesia, and care in detaching the tonsil will diminish the risk of this. It adds to the discomfort of convalescence, and if severe it may have a harmful result on the action of the palate and on the voice. Indeed, it is contended that enucleation itself has this latter drawback, though it is difficult to see how it could be advantageous for the voice that a diseased tonsil should remain. In a singer, one would, of course, be particularly careful not to remove a tonsil which was not evidently diseased.

It must be confessed that convalescence is rather more protracted after tonsillectomy than after tonsillotomy. Granulations sometimes form in the depth of the cavity, but they require no treatment and soon disappear.

It will, perhaps, be contended that even if enucleation is the proper operation for diseased tonsils, its recommendation is a policy of perfection which cannot be always carried out—in short, that it is economically impossible in these days of medical inspection of schools and of consequent great increase in the number of children requiring operation. This can be used as an extenuating circumstance in reference to tonsillotomy, though it cannot be used as an argument against enucleation. The best may not always be possible, but I am not sure that tonsillotomy is always the second best.

The removal of the adenoids is the principal thing in most of these children, and if this is done and the mouth attended to by the dentist, as school boards are now making arrangements for, many tonsils need not be interfered with. As Lance says, "Simple hypertrophy is not in itself a pathological condition: far from constituting a disease, it is the expression of the resistance to infection, and the routine removal of such tonsils merely because they are enlarged and without enquiring whether they are diseased or not is unscientific." As I have before said, the number to which this attitude of non-interference is applicable probably does not constitute a very large proportion of the whole.

THE X-RAYS IN TREATMENT.¹

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WITHIN the last few years the question of "dosage" in the administration of *x*-rays for therapeutic purposes has received much consideration. Previously, radio-therapeutic applications were made in the most haphazard way, the dangerous nature of the agent and its far-reaching effects not being realised. In the appendix to the late Dr. Kassabian's excellent work on *Electro-Therapeutics*, published as recently as 1907, one finds the technique of many eminent radiologists described. In the majority of the descriptions the details give no indications as to the quality of the rays produced, or the quantity absorbed by the patient—indeed, the dosage is largely a matter of guesswork based on experience. The following quotation illustrates this point:—"Dosage is determined by a light or dark green fluorescence of the tube. The best time to discontinue treatment . . . is at the appearance of any erythema, taking into consideration the number and duration of exposures." Now, it is true that a certain skill in this guesswork may be gained in time. But I contend that a course of minute doses can be administered in this manner only by one of great experience: even then it is risky, it is unscientific, and, happily, it is quite unnecessary. To administer the rays in definite measured

¹ Read at a meeting of the Medico-Chirurgical Society of Glasgow held on 3rd March, 1911.

doses is more troublesome and more expensive than by the older guesswork method: but when one realises the extreme potency of the agent, and the havoc its injudicious use has already wrought, one must welcome these means of measurement, and use them regardless of either expense or trouble. Already many valuable lives of both medical practitioners and patients have been lost through exposure to the *x*-rays, and Dr. Kassabian, himself one of the latest victims, says in his book,¹ "The number of operators who have been disfigured, maimed, and injured would form a deplorable list of tremendous proportions."

I do not think that it can be too much insisted on that the administration of the *x*-rays, except in carefully measured doses, is absolutely inexcusable.

It is not my intention to discuss minutely the question of "dosage." The problem is very complicated and difficult, and I admit that no one of the methods of measurement at present in use is completely satisfactory. I intend rather to give in detail the application of measurement I have found most simple in the daily routine.

Regarding the rays themselves, there are two factors to be considered—(1) the quality of those falling on the part treated, and (2) the quantity absorbed by the tissues. Any system of measurement must necessarily take cognisance of both. A beam of *x*-rays is composed of radiation of different penetrating powers, just as a beam of ordinary light is composed of rays of different wave length. Rays are described according to their powers of penetration: those of low penetrating power are called "soft," those of high penetrating power are called "hard," while an intermediate degree is spoken of as "medium." The proportion in which "soft," "medium," and "hard" rays are mixed depends on the degree of vacuum of the tube from which they emanate. When the vacuum is low, the "soft" rays abound: when the vacuum is high, the "hard" ones are proportionately increased. When it is desired to affect any deep-seated tissue, a tube emitting "hard" rays in abundance is selected, while for superficial effects a tube of low vacuum, giving off chiefly "soft" rays, is used. Our means of controlling the penetration are—

1. The regulation of the vacuum.
2. The use of screens.

1. For the first we use a tube having a self-regulating vacuum (such as Müller's heavy anode automatic vacuum

¹ *Ibid.*, p. 407.

regulating tube). It is set so that the vacuum shall not rise above a certain degree, and as the vacuum tends to rise while a tube is in use (provided it is not overheated), this device keeps it fairly constant.

2. Screens are used to absorb the softer rays—that is, those whose chief effects are on the skin. These screens are employed when the object is to affect deep structures. They may be made of various substances, such as wash leather and gelatine. I use sheets of aluminium, 1 mm. in thickness, superimposed on one another, the number used depending on the effect desired. Belot, an eminent exponent of radiology, in a recent number of *Archives of the Roentgen Ray*, states that aluminium is the most satisfactory material for screening purposes.

I shall now briefly refer to the action of the *x*-rays on the tissues, and, as different doses produce different effects, I shall consider the results of—

1. Small doses.
2. Full doses.
3. Excessive doses.
4. Repeated doses.

The administration of a dose of *x*-rays is followed by a period of time during which no change is observed in the tissues irradiated. This is known as the *latent period*. The latent period is shorter after large doses than it is after smaller ones.

1. As the result of the administration of a small dose all epithelial structures are stimulated; there is increased secretion from the sweat and sebaceous glands, and the hair grows more vigorously. In the course of a few days or longer, these effects gradually pass off, and the part returns to its normal condition.

2. Following a full dose, a slight erythema may appear after a latent period of ten days or a fortnight. The hair will become pale in colour, and in about three weeks it will drop out, the bulb being temporarily atrophied. The erythema passes off in a few days, the hair roots gradually recover, and in from six to twelve weeks a vigorous growth of new hair takes place, and normal conditions again prevail.

3. When a large dose has been given, erythema appears in about one week, and steadily increases in severity. Soon marked inflammatory reaction sets in, and vesication takes place. This is followed by necrosis, which will be deep or superficial according to the quantity of rays absorbed. The ulceration thus produced is very indolent, and, in bad cases,

may last for years. Ultimately it may become epitheliomatous. When healing does at last occur, the resulting scar is white, dense, and unyielding, it is poorly supplied with blood-vessels, and is prone to ulcerate again.

4. The result of repeated doses depends on whether or not another dose is administered before the effects of the previous one have passed off. If the doses be such that no distinct inflammatory reaction is produced, and the interval is sufficiently prolonged, a very large number may be administered without producing any very definite organic change. Some increase in fibrous tissue and lessening of epithelial tissues always result. It is probably on this account that the practice of giving a course of *x*-raying after excision of malignant disease is to be recommended.¹ If the doses are repeated so often that the tissues have not entirely recovered from one when the next is given, a time comes when an inflammatory reaction—more or less violent—results, and thus the rays are said to have a *cumulative* action.

The *chronic radio-dermatitis* of operators is the result of small oft-repeated doses. It occurs chiefly on the backs of the hands. As already mentioned, epithelial growth is thereby stimulated. The result of frequent small stimulations is that the skin becomes hard and dry, and warts form. Changes in the blood-vessels and capillaries also take place, their walls becoming apparently much thinned. The hands become red and mottled in appearance. The only reasonable treatment is absolute protection from the causal agent, and, indeed, from irritation of any kind. Even then the condition improves very slowly. When skin has been rayed to such an extent that it is largely replaced by fibrous tissue, and appears as a dense white scar with telangiectatic vessels over its surface, it should not be rayed again under any circumstances whatever. This is a condition which should not occur. Unfortunately, in the earlier days of radio-therapy, when accurate dosage was unknown, excessive raying was common, and this state of the skin was sometimes seen; but with the means of dosage and control now available, the risk is very materially lessened.

1. To Holz knecht is due the credit of first elaborating a system of *x*-ray dosage. He takes advantage of the property which the rays possess of producing change of colour in certain substances when brought under the influence of the rays. He has prepared a pastille (the composition of it is,

¹ See Dr. Sampson Handley's paper, "The prophylaxis of breast cancer," in the *Practitioner*, April, 1910, p. 463.

unfortunately, kept secret) which, under the influence of the rays, changes from a canary yellow colour to brown. He has also prepared a graduated scale showing various tints. These shades are numbered from 3 to 24, and this scale is now generally recognised as the standard of *x*-ray dosage. The *unit* is that amount of raying necessary to change the colour of a pastille from one shade to the next. It is symbolised by Holzkecht's initial H.

2. Sabouraud, taking advantage of the same property, has invented a somewhat similar method. Instead, however, of employing a scale of colours, a pastille of one colour only is used. This represents the same dose as does No. 5 on Holzkecht's scale. The method has these advantages—that it is cheap, and that the composition of the pastille is not kept secret. It has the disadvantage of indicating one dose only, namely, 5 H.

3. A third method—the one which I employ and recommend for routine work—is the use of a milliamperemeter on the tube circuit, and a meter to count the number of *x*-ray impulses administered at one sitting. An impulse is originated each time the current in the primary circuit is interrupted; one has therefore only to count the number of revolutions the interrupter makes during the sitting. This is done by attaching to the spindle of the revolving interrupter a revolution indicator,¹ such as is commonly used on the wheel of a bicycle to record the distance travelled.

In using this system, the following are the points to which attention must be paid: to secure accuracy all are essential:—

1. The *distance* between the anticathode (the point from which the *x*-rays emanate) and the part treated.

2. The *penetration* of the rays.

3. The *amount of current* passing through the tube.

1. The distance is determined by the *applicators*. I find the best working distances are 6 inches and 9 inches: accordingly, most of our applicators are made so that the part treated shall be at one or other of these distances from the anticathode. The diameter of the area treated should always be something less than half the "distance," in order that the dose may be evenly distributed over the entire irradiated surface.

2. I have already described how to determine the penetration of the rays and keep it constant. If by any chance the penetration should alter while the dose is being given, this

¹ Made for the writer by Messrs. D. B. Selkirk & Co., Glasgow.

is at once observed by an alteration in the rate at which the current is flowing through the tube—if the penetration increase, the meter shows that less current is passing; if the penetration lessens, the meter indicates an increase in the current.

3. The current passing is indicated on a meter, and it is essential that the readings should be correct. Unfortunately, there is always a certain amount of the current generated which flows in the wrong direction, with the result that the meter indicates something less than the actual current. To correct this, a valve is inserted into the tube circuit, which permits the forward current to pass easily, but offers a high resistance to the inverse current.

An installation with this method of dose measurement must first be standardised. We must determine how many impulses (under set conditions) are equivalent to 1 H. We do so by inserting one of Sabouraud's pastilles, and finding out how many impulses are required to reduce it: this number we know is equivalent to 5 H, and from that data other doses can be calculated, *e.g.*, if a tube, having a penetration represented by $4\frac{1}{2}$ inches spark gap, has half a milliamperes passing through it, and Sabouraud's pastille (placed at 3 inches distance) is reduced in 5,000 impulses, we know that under these conditions, with an applicator to fix the part at 6 inches distance, 1 H = 1,000, while, with an applicator fixing the part at 12 inches distance, 1 H = 4,000. In order to calculate the number for any other distance, one has but to remember the law that *light diminishes inversely to the square of the distance*.

By this method of measurement one is able to vary the dose within wide limits, and the personal equation is eliminated. With the other methods one must be able to appreciate very fine shades of difference in colour, and while it is usually easy to do so in good, diffused daylight, in dull weather or sunshine it is very difficult, and in artificial light it is almost impossible to be accurate.

I shall now very briefly name some of the diseases that are more or less amenable to *x-ray* treatment, and I shall suggest what I regard as suitable doses. In a word, I propose to give a kind of posological table for radio-therapy.

1. *Rodent ulcer*.—A very large percentage of such cases heal under the influence of the *x-rays*. It is very important that treatment be continued, not only till all ulceration has healed over, but until all raised edges, however small, have

entirely disappeared. Otherwise, recurrence will take place almost immediately. The dose should be 6 H once in three or four weeks, or 2 H once weekly. Rays of medium penetration should be used, and no screen interposed.

2. *Keloid* is another disease which is very amenable to the influence of the *x*-rays. The dosage is much the same as for rodent ulcer, namely, 6 H once in five or six weeks. Perhaps my most successful case was one in which a keloid practically disappeared with one dose of 5 H, followed after a month's interval with a second of 3 H. The keloid was raised and red. It was situated on the neck, in the scar left after removal of glands. It was narrow and straight, measuring about 3 inches in length.

3. *Psoriasis*.—When the disease occurs in large, chronic, solitary patches, it is usually very favourably influenced by the *x*-rays. I have seen a patch on the back of the neck, measuring about 4 inches in diameter, disappear after two doses of 6 H, with an interval of four weeks between them. The rays were of medium penetration (the equivalent spark in air being about 4 inches), and no screens were used.

4. *Lupus vulgaris*.—This disease is, as a rule, best treated by *x*-rays in conjunction with other agents, *e.g.*, cauterisation as described by Dr. Goodwin Tomkinson, of Glasgow, in a paper which he read before the Royal Society of Medicine.¹ It may also be used along with Finsen's light treatment or curettage. Great improvement usually follows the first few doses, but spots are left on which the rays seem to have less influence, and continued raying is apt to produce dense scar tissue with telangiectasis. It is difficult to lay down rules as to dosage, but in no case should a single dose exceed 6 H or 7 H, and if so large the interval should be three to five weeks. A screen of aluminium 0.2 mm. in thickness should be used, and the rays should be of medium penetration. Possibly 2 H once a week for six or eight doses followed by a rest of some weeks is suitable in many cases.

5. *Tuberculous glands*, at any stage, but particularly in the early stages, usually respond well. The rays should be of high penetration; an aluminium screen of 0.5 mm. interposed and a dose of 7 H to to 9 H administered once in from two to four weeks. As a rule progress is slow.

6. *Exophthalmic goitre*.—A large percentage of cases improve. It is possible that too small doses aggravate the symptoms, and when we remember the stimulating effect of small doses it is reasonable to suppose that some of the

¹ Published in *Proceedings* of that Society, April, 1908.

failures which we have had are to be attributed to this cause. The object of the treatment is to cause partial atrophy, and not stimulation, of the gland. Rays of medium penetration should be employed, 0.3 mm. aluminium screen inserted, and a dose of 6 H to 8 H once in two to four weeks should be given.

7. *Alopecia areata*.—Excellent results often follow the administration of small doses repeated at long intervals. I use rays of low or medium penetration without screening, and give 1 H or 2 H once in two or three weeks. *E.g.*, a child, 8 years old, lost the hair from the entire head. Occasionally some downy hair would appear, only to be again shed. After two years, during which various forms of treatment were used, the head still remained bald. She then began *x*-ray treatment. She received 2 H once a month for four doses with rays of medium penetration, and by this time, that is in three months, strong dark hair was growing all over the head. Thereafter, as the child lives a distance from town, and the hair looked healthy, the *x*-ray treatment was stopped, and the mother applied faradic brushing daily. The hair continued to grow healthily and has been well for one year.

8. *Leukæmia*.—Patients suffering from leukæmia usually benefit, especially is this so in the more chronic cases, in which the symptomatic improvement, the reduction in size of the spleen, and the change in the blood count are occasionally very striking. Unfortunately the improvement is not permanent. The rays should be of fairly high penetration, an aluminium screen of 0.5 to 0.8 mm. thickness interposed, and a dose of 6 H to 8 H given once every two or three weeks, or a smaller dose may be given more often. Treatment should be applied to the long bones and to the spleen. I usually treat the spleen over three separate areas, and as the above dose may be given to each area a large quantity of rays can be administered in a comparatively short time. *E.g.*, a man, aged 32, came into the Royal Infirmary under the care of Dr. Cowan (to whom I am much indebted for kindly supplying me with these details for publication). He was suffering from great enlargement of spleen and liver. On 26th February, the blood count was—white cells, 471,000; reds, 2,850,000; the hæmoglobin was 62 per cent. On 2nd June the Journal note is to the effect that there is great improvement in every way. The spleen and liver are much diminished in size. White cells number 34,000; reds, 5,200,000; hæmoglobin, 96 per cent. A few days later, however, there was unfortunately a sudden rise in leucocytes, almost as high as on

admission (410,000), and some increase in the size of the spleen. He was now dismissed feeling quite well. Some months later the patient reported himself, and it was found that he had maintained the symptomatic improvement, but the leucocyte count was still high. Or another case, a man, aged 28 years. He was admitted to the Royal Infirmary on 4th October, 1907, when the leucocytes numbered 200,000; when dismissed on 17th April the leucocytes numbered 11,000.¹

9. *Hyperidrosis*.—This disagreeable trouble can usually be relieved or improved. Rays of medium penetration are used without screening: 5 H once in four or five weeks for several doses is usually sufficient.

10. *Hairy and pigmented moles*, such as are sometimes seen on the face and neck, can be greatly improved, the hair removed, and the pigmentation lessened. Fairly large doses should be given, with rays of medium penetration, and no screen used: 5 H or 6 H should be administered once in three to five weeks. Many doses may be required, and care must be taken not to produce a violent reaction. One is, therefore, inclined after the first few applications to reduce the dose.

11. *Nævi*.—Both the flat port-wine stains and the raised cavernous varieties can be vastly improved by raying. It has been stated that marked inflammatory reaction must be produced, but with this I do not agree. I use rays of medium penetration, without a screen (perhaps the use of an aluminium screen, 0.1 mm. in thickness, might be an advantage), and I give 3 H or 4 H about once a fortnight. A large number of sittings are required, and as radium gives more excellent results, and is much more easy of application, especially when the patient is a young child, I have largely replaced the use of the *x*-rays in cases of *nævus* by radium.

12. *In deep-seated malignant disease*.—Some relief of pain and checking of the rate of growth are all that can be expected. In saying this, I do not deny that a number of cases of undoubted cancer (other than rodent ulcer) have disappeared under *x*-ray treatment. One such case, a round-celled sarcoma in the nasopharynx, I showed before this Society some years ago. The percentage of cases, however, in which this happy result is obtained is so very small that I think one cannot say more at present than I have said. In operable cases I am strongly of opinion that a short course of

¹ This case was shown before the Society some time ago by Dr. W. K. Hunter, to whom I am indebted for the details.

x-rays should be administered, perhaps before, but certainly always after, excision. The risk of recurrence, it is believed, is thereby lessened.

13. *The epilatory property* of the rays is made use of in the treatment of such diseases as ringworm and favus. The object is to give such a dose as shall produce complete temporary epilation, and the greatest care must be taken not to exceed the dose, otherwise permanent baldness may result. The dose is 5 H with rays of medium penetration (4 to 5-inch equivalent spark gap). No screen is used, and *one dose only* should be required. It cannot be denied that there is a small risk of occasionally producing permanent partial baldness. I, therefore, think that *x*-ray epilation should only be had recourse to in those cases which resist all other forms of treatment, and I believe there are very few indeed that will not yield to ionic medication with iodine or mercury.

I have by no means exhausted the list of the diseases in which *x*-ray treatment has been found of service. It was not my intention so to do. Perhaps, however, I have said enough to show that the *x*-rays have a large field of usefulness in the treatment of disease, and that definite dosage is not only obtainable, but *absolutely essential* to the practice of radiotherapy. The time is past when such phrases as "ten minutes three times a week" or "mild doses daily" are permissible. Like strychnine and arsenic, the *x*-rays are safe and useful when properly prescribed and administered; but like them, too, they are capable of doing terrible damage, and one has but to think of our *confrères* who, like the late Dr. Kassabian, have lost their lives, and of the many others who have lost limbs or been otherwise maimed, to realise how imperative it is that the rays be administered in proper manner only.

Obituary.

THOMAS REID, M.D., LL.D.

DR. THOMAS REID died at his residence, 11 Elmbank Street, on 23rd March, after a few hours' illness, and by his death Glasgow has lost an outstanding personality in the profession.

Dr. Reid was a native of Shotts, where he was born in 1830, and where he spent his boyhood. Previous to commencing the study of medicine, he had some years' training in a workshop with a view to a career in engineering. It was thus a little later in life than usual that he began to attend the medical classes in the old College, where he graduated M.D. in 1857.

Commencing practice immediately thereafter, he early turned his attention to ophthalmology, in which he was afterwards to make a name for himself; and in 1868 he became a member of the staff of the Eye Infirmary. During his period of waiting, however, he was not idle, but was continually employing his spare time in microscopical research. This brought him into close touch with the late Professor Allen Thomson, and helped to lead to his being appointed, in 1871, Waltonian Lecturer in Ophthalmology in the University, in succession to Dr. William Mackenzie. Dr. George Rainy had been in partnership with Dr. Mackenzie, and on the death of the latter had been asked to continue the lectures; but he only survived Mackenzie by a year, and on his death, in 1869, the course of lectures was continued by Reid, who was ultimately appointed lecturer. Dr. Reid also succeeded to the private ophthalmic practice of Drs. Rainy and Mackenzie. In 1900 he resigned the lectureship and at the same time retired from the post of surgeon to the Eye Infirmary. He continued, however, to practise till within the last year or two, when he gave up his consulting rooms in Bath Street, the door of which had for so many years borne his brass plate along with that of Dr. Mackenzie.

We have already referred to Reid's enthusiasm for scientific work. This continued throughout his life. He was always eager to examine into the histology of tissues, normal and pathological. He held to the opinion that elaboration of technic tended to obscure or to destroy many histological



[Photo. by]

[Annan, Glasgow.]

THOMAS REID, M.D., LL.D.

details which could otherwise be preserved and demonstrated. Accordingly he followed simple methods of fixation and staining. Justification of his views was afforded by the results which he obtained, and the beautiful micro-photographs which he made from his microscopical sections.

But microscopical investigation did not prevent him from engaging in other paths of research. He devised an instrument for estimating the curvature of the cornea, a description of which was published in the *Proceedings* of the Royal Society for 1893. Like his histological methods the instrument was simple and unpretentious in appearance—it could be carried in the pocket—but it was scientifically made and strongly appealed to those engaged in estimating and correcting errors in refraction.

Dr. Reid did not publish much. He used to declare that the faculty of expressing his thoughts was in him poorly developed; and, it may be, that kept him from communicating to societies or to literature the results of his researches. But there was something more. He was a man of innate modesty, and he did not think it right to propound any general principle until he was quite sure of its foundation. He was constantly learning, and gaining fresh light on the processes at work in the living tissues, and he often said that he did not yet know enough to publish anything conclusive. He did, however, make a few contributions to scientific literature, and they were of such quality as to cause his readers to regret that he did not publish more. Of these we may mention a paper on epithelial "glia," published, with reproductions of micro-photographs, in the *Giornale della Reale Accademia di Medicina di Torino* (1904). A translation of the text of this paper appeared in the *Journal* for March, 1905. Shortly afterwards he contributed an article on "The Evolution of Complex Teeth" to *La Fotografia Artistica* (Turin, October, 1905); and in August, 1906, in the same periodical, he published one on the "Development, Growth, and Reproduction of the Hair." This paper, amplified by additional illustrations, appeared in the *Journal* for January, 1908.

About the same time he contributed a series of micro-photographs to a congress at the University of Turin, for which he was awarded a gold medal.

He never sought distinctions; but his services to science did not pass altogether unnoticed. In 1896 he received the LL.D. from his *Alma Mater*; in 1903 he was elected a Foreign Corresponding Member of the Royal Academy of Medicine in Turin: and, finally, the King of Italy conferred on him the

Order of Commendatore of the Crown of Italy, a very high honour.

Dr. Reid went but little into society; but the writer was among those privileged often to enjoy an evening with him in the Elmbank Street house, to converse with him over a wide range of subjects, and to see his specimens and photographs. He was always ready to discuss medical and scientific problems, and did so with characteristic humility; and he would often garnish the conversation with remarks and stories about a bygone generation. His friends always received a warm welcome, and it may truly be said that none came away from his company without feeling mentally enriched.

He is survived by his widow, to whom we offer our respectful sympathy.

MAJOR GEORGE LAMB, M.D., I.M.S.

WE regret to announce the death, in Edinburgh, on 12th April, of Major George Lamb, of the Indian Medical Service.

Major Lamb, who was in his forty-second year, was born in Greenock, and received his medical education at the University of Glasgow, where, in 1890, he graduated M.B., C.M., "with high commendation," and received the Brunton Memorial Prize awarded to the most distinguished graduate in medicine of the year. He was appointed house surgeon to Sir Hector Cameron's wards at the Western Infirmary in the winter 1890-91, and then house physician to Sir William Gairdner. On leaving the Western Infirmary he became demonstrator of anatomy with Professor Cleland, and subsequently joined the Indian Medical Service, passing in at the top of the list, and with a high margin of marks. As a junior officer he saw active service on the Indian Frontier, taking part in the Waziri Expedition. He afterwards was appointed to the Pasteur Institute at Kasauli, where he threw himself into scientific work, and soon became an acknowledged authority on snake venoms and on plague. Later, he became senior member of the Plague Commission in India, and director of the Institute at Kasauli.

In 1903 he graduated M.D., "with honours," his thesis being "On the action of the venoms of the cobra and of the dabria on the red blood corpuscles and on the blood plasma." For this thesis he gained also a Bellahouston Gold Medal.

About two years ago he came home on long leave. While

at home his health seemed to break down, and he was for a long time laid up. It was only recently, however, that his illness assumed a serious aspect, and it was then found that he was suffering from an incurable malady.

As a student at the University, Lamb was an enthusiast, and he maintained this attitude all through his life in the Service. His honourable and distinguished career left him the same simple and unaffected man as when he first entered the Service, and to his many friends in Glasgow his death will be felt as a personal loss.

Major Lamb is survived by a widow and three children.

ANDREW B. HOUSTON, M.B., C.M. GLASG.

ALTHOUGH for a considerable period laid aside from active work, Dr. Houston's death from heart failure, on 28th March, came with startling suddenness. Graduating in Glasgow in 1889, Dr. Houston was in practice near Manchester till his health gave way, and he was compelled to relinquish practice. He came to reside in Busby, where he died.

ANGUS M. MACKINTOSH, M.B., C.M. GLASG.,
HAMILTON.

WE regret to have to announce the death, on 6th April, at his residence in Hamilton, of Dr. Mackintosh. Dr. Mackintosh, who graduated in 1896, is survived by a widow.

HENRY A. PATTULLO, M.B., C.M. GLASG.,
KELSALL.

WE have also to announce the death at Kelsall, Cheshire, on 7th April, of Dr. Pattullo. Dr. Pattullo graduated in 1895, and will be remembered by his former fellow-students for his cheerful and manly personality. He is survived by a widow.

CURRENT TOPICS.

WE are glád to learn that Professor Robert Muir has been recommended for the honour of F.R.S. In congratulating Professor Muir on this high distinction which has come to him, we venture to say that it is a fitting acknowledgment of the position which he has already attained in the scientific world.

HONOUR TO DR. BANKS, OF DUNOON.—At an “at home” in connection with Dunoon Y.M.C.A. semi-jubilee celebrations last month, Dr. John Banks was presented with an illuminated address in recognition of his long connection with the Association. Dr. Banks was the first president when the Association was formed in 1886, and has ever since taken an active interest in its welfare.

APPOINTMENTS.—John J. Buchan, M.D.Glasg. (M.B., Ch.B., 1898), has been appointed Medical Officer of Health for West Berkshire. Dr. Buchan was educated at Allan Glen’s and at the High School, and studied medicine at the University of Glasgow. He obtained the D.P.H.Camb. in 1901, and graduated M.D.Glasg. in 1905, receiving honours for his thesis on “Bacteriuria in Enteric Fever.” After holding for some years the post of Medical Superintendent of the Lanarkshire County Council Hospital at Motherwell, he was, in 1904, appointed Medical Officer of Health for St. Helens, Lancs. Last year he became a barrister-at-law of Gray’s Inn. Dr. Buchan has contributed to literature many papers on public health matters.

Hugh A. Macewen, M.B., Ch.B.Glasg. (1905), D.P.H.Lond. and Camb., whose appointment as Medical Officer of Health of Fife and Kinross we recently noted, has just resigned to take up the duties of an Inspector under the Local Government in England.

D. E. Powell, M.B., C.M.Glasg. (1894), has been appointed District Medical Officer of the Wandsworth Union.

Alexander Scott, M.D.Glasg., who has for many years been one of the Certifying Factory Surgeons in Glasgow, has been appointed to succeed the late Dr. Patrick in the same capacity for the Eastern District of the city.

William Brown, M.D.Glasg. (M.B., C.M., 1884), has been appointed Medical Adviser in Lunacy Cases to the Bristol Magistrates.

James Robertson, M.B., C.M.Glasg. (1893), has been appointed Certifying Factory Surgeon for Clackmannan District.

Robert Bruce, M.B., Ch.B.Glasg. (1903), has been appointed full time Assistant Medical Officer to the Glasgow School Board.

Gavin D. Muir, M.B., Ch.B.Glasg. (1905), F.R.C.S.Edin., has been appointed House Surgeon to Hartlepoons Hospital, Hartlepool.

GLASGOW ROYAL INFIRMARY CLUB.—The annual dinner of the Club was held in the Grosvenor Restaurant on Friday, 10th March. Dr. David N. Knox occupied the chair, and Drs. Freeland Fergus and J. Hart McNicol were croupiers. Amongst those present were Drs. Robert Perry, R. H. Parry, John Barlow, J. Wallace Anderson, G. S. Middleton, Wm. R. Sewell, T. K. Monro, Jas. Adams, and J. Maxtone Thom (superintendent).

Dr. Scott read the minutes of last meeting, and reported "that the Club has now a membership of over 200, and is in a sound financial position. We have now a printer's proof of the list of residents and of the physicians and surgeons of the Glasgow Royal Infirmary. This we intend publishing, with an introduction on the history of our ancient hospital. We would urge those present to get as many to join as possible. We require all the support we can get, and there are still a number of even the present staff who have not yet joined the Club."

Drs. John Patrick and Jas. Scott were appointed joint secretaries, the former in place of Dr. R. Ramsey. Drs. John Fergus, Beath Henderson, and D. Macphail were appointed members of committee in place of Drs. W. K. Hunter, R. Ramsey, and Arch. Harrington.

The Chairman proposed the toast of "The Royal Infirmary." He described the state of surgical treatment in his student and resident assistant days, and mentioned that he had seen Lister perform only one abdominal operation. Dr. John Barlow replied.

Dr. Freeland Fergus proposed the toast of "Past and Present Residents," and Dr. R. H. Parry replied for past, and Dr. J. Hart McNicol for present, residents.

The toast of "The Chairman" was proposed by Dr. Beath Henderson.

An excellent musical programme was rendered. Dr. John Fergus, in poetical language, gave a description of Levaditi's demonstration of trypanosomes and spirochætes as seen by Dr. John M'Clumpha of Windyshaws, and also recited two poems, entitled "The Peel" and "The Bottle."

A most enjoyable evening was spent.

ROYAL SAMARITAN HOSPITAL AND POST-GRADUATE TEACHING.—We understand that it is proposed shortly to commence a post-graduate course in gynæcology at the Royal Samaritan Hospital. It is proposed also to appoint a limited number of clinical clerks to the hospital. Holders of this office must be fully qualified medical men. Full particulars may be had on application at the hospital, Coplaw Street, off Victoria Road.

GLASGOW PARISH COUNCIL: NEW CONVALESCENT HOME.—The Glasgow Parish Council are about to make an interesting experiment in the treatment of infirm persons from 14 years upwards. They have purchased Duncutha House, Kirn, which will be converted into a convalescent home. Duncutha was the property of the late Mr. Robert Nish, baker, Glasgow, and it has been purchased by the Parish Council from his trustees at the price of £3,500. The house, which is situated between Kirn and Hunter's Quay, is a comparatively modern mansion, and will provide accommodation for 200 persons. It stands in its own grounds, which extend to 20 acres, and commands a beautiful view of the firth. The grounds are richly wooded, and there are a number of serviceable out-houses. It is intended to conduct the enterprise on the lines suggested by the report of the Poor-law Commission, the object being to place patients in an environment which will lend itself to more favourable treatment of their cases than is possible in a huge establishment like Stobhill, where there is a large and mixed population.

PROVIDENT MEDICAL SERVICE.—A largely attended meeting of medical practitioners was held in the Grosvenor Restaurant, Glasgow, on 27th March, under the auspices of the Glasgow and West of Scotland Branch of the British Medical Association. Dr. J. N. Marshall, Rothesay, presided, and Mr. J. Smith Whitaker, medical secretary to the British Medical Association, gave an address, introducing a discussion on "The Report on the Insurance or Provident Medical Service." Dr. A. K. Chalmers, medical officer of health for Glasgow, opened the

discussion, and Dr. Ebenezer Duncan and Dr. Barr Stevens also spoke. The Chairman afterwards submitted a resolution pledging the meeting to promote united action among medical practitioners in the matter of provident medical attendance, and urging that the work of provident medical attendance should be open to all practitioners, and that the remuneration should be such as is approved by the British Medical Association.

NEW QUARTERS FOR GLASGOW R.A.M.C. TERRITORIAL UNITS.—Another hitch has arisen in connection with the proposed quarters and drill hall for the Medical Territorial Units in Glasgow, five in number. After considerable discussion and lengthy correspondence, plans were approved and a site obtained for the new quarters. The Chief Engineer of the Scottish Command has now taken up the consideration of the subject, and new plans have been suggested. The whole question is one which is likely to strike in the near future at the efficiency of the medical units and their popularity in the city. The medical units in Glasgow have hitherto kept always at full establishment and in a very high state of efficiency, and since the institution of the Territorial Force these units have not only kept up to their full establishment with a waiting list of recruits, but are the only units in the city which have done so. Despite this, the medical corps is the only one which is not provided with head-quarters and drill hall, officers' and sergeants' mess, and recreation rooms, gymnasiums, &c., for the men. Drills have had to be abandoned for want of accommodation, and the officers are working under very great difficulties. The question is becoming very acute, and there is very free discussion as to whether, in all the circumstances, time and energy should be expended by officers and men with such inadequate facilities and encouragement.

HEALTH OF SCHOOL CHILDREN: GLASGOW WATER AND RICKETS.—The March meeting of the Glasgow and West of Scotland Infant Mistresses' Association was held in the Religious Institution Rooms, Buchanan Street, on 25th March. Miss Walker, Elgin Street School, Clydebank, the president, was in the chair. A lecture on "The Medical Inspection of School Children" was delivered by Dr. E. T. Roberts, chief medical officer under Glasgow School Board. The lecturer said that, as defined by the Department, the extent of medical examination and supervision covered medical inspection of school children at regular intervals, the oversight of the

sanitation of the school buildings, and the prevention as far as possible of the spread of infectious diseases, including skin disease. It was pointed out, he said, that action in those directions would be incomplete unless the personal and home life of the child could also be brought under systematic supervision. It was truly observed "that the home was the point at which health must be ultimately controlled." He need hardly say that the aims and objects of the School Board of Glasgow were entirely in harmony with those of the Department. While it was both necessary and desirable to obtain statistics, yet the main purpose of the inspection was to secure in every possible way the improvement of the surroundings and physical life of the children. With a view to securing the co-operation of the parents in the work, they were invited to attend the examination of the children. That gave the doctor an opportunity of directing the parents as to the steps to be taken for the amelioration of any abnormal conditions discovered, and it served the useful purpose of enabling the teachers to acquaint themselves with the home conditions of the pupils, and to secure the sympathetic co-operation of the parents in the work of the school. Dr. Roberts explained the symptoms and treatment of various skin diseases and verminous conditions of the body. He also spoke of rickets and spinal curvature, and said that to prevent the development of the latter complaint attention to posture was of considerable importance. When the child was not engaged in writing his back should be supported by an efficient rest. Rickets, he said, was a disease often attributed to the water-supply of the town in which the children lived. It was quite true that it occurred in towns such as Glasgow and Keighley, where the water was very soft; but he thought that was rather a coincidence than a consequence, and that the true cause of the disease was to be found in an improper dietary and unhygienic surroundings and habits. The giving of condensed milk and preserved foods to infants was a very serious mistake, and yet one frequently made. Those foods usually contained an excess of starch and were deficient in fat. It was for that reason that medical men were in the habit of advising porridge, sweet milk, cream, and often cod liver oil and chemical food in the treatment of that very prevalent disease. Dr. Roberts also dealt with handkerchief drill, breathing exercises, the care of the teeth, and the temperature of class-rooms. In conclusion he said the medical inspection of the children should result in incalculable benefit both to the child and to the community.

In the discussion which followed, Mr. McKechnie, H.M. Inspector of Schools, emphasised the importance of handkerchief drill; and Miss Bannatyne, of Glasgow School Board, spoke of the notable absence of friction during the whole progress of the medical inspection.

TOTAL ABSTINENCE AND LONGEVITY.—The seventieth Report of the *United Kingdom Temperance and General Provident Institution* is a record of continued progress. The number and amount of new policies completed are the largest ever issued by the Institution in any year. The following figures show the mortality experiences, expected and actual, in the Temperance and General Sections for the past year, and for the quinquennium 1906-1910:—

	EXPECTED.		ACTUAL.	
	Claims.	Amount.	Claims.	Amount.
Temperance Section, .	486	£158,356	303	£93,525
General Section, . .	459	£146,071	363	£87,145

The mortality experience of the quinquennium 1906-1910 has been as follows:—

	EXPECTED.		ACTUAL.	
	Claims.	Amount.	Claims.	Amount.
Temperance Section, .	2,291	£739,414	1,504	£441,838
General Section, . .	2,282	£681,932	1,900	£544,946

The surplus for the past quinquennium allows of a reversionary bonus which, on whole life policies with full profits, is at the rate of £2, 2s. per £100 per annum in the Temperance Section, and £1, 15s. per £100 per annum in the General Section.

The report of the *Sceptre Life Association, Limited*, shows the following mortality experience for the past year:—

	Expected Deaths.	Actual Deaths.	Percentage.
General Section,	136	111	81·62
Temperance Section, . . .	133	61	45·86

The mortality experience of the same Company for twenty-seven years (1884-1910) is as follows:—

	Expected Deaths.	Actual Deaths.	Percentage.
General Section,	3,352	2,674	79·77
Temperance Section, . . .	2,311	1,214	52·53

Whole life bonuses were added to this Company's policies for the five years ending 1908, in the proportion of £105 in the Temperance Section and £90 in the General Section for each £1,000 assured.

The following results for the past twenty-seven years are given :—

GENERAL SECTION.

Period.	Expected Deaths.	Actual Deaths.	Per- centage.
Five years—1884-1888, . . .	466	368	79·00
Five years—1889-1893, . . .	564	466	82·62
Five years—1894-1898, . . .	628	498	79·30
Five years—1899-1903, . . .	712	548	76·97
Five years—1904-1908, . . .	709	573	80·82
Two years—1909-1910, . . .	273	221	80·95
Total—twenty-seven years, .	3,352	2,674	79·77

TEMPERANCE SECTION.

Period.	Expected Deaths.	Actual Deaths.	Per- centage.
Five years—1884-1888, . . .	195	110	56·41
Five years—1889-1893, . . .	312	184	58·97
Five years—1894-1898, . . .	419	228	54·42
Five years—1899-1903, . . .	514	270	52·53
Five years—1904-1908, . . .	607	294	48·43
Two years—1909-1910, . . .	264	128	48·48
Total—twenty-seven years, .	2,311	1,214	52·53

An analysis of the foregoing figures shows that the mortality in the General Section has not gone down over the twenty-seven years. On the other hand, the average mortality in the Temperance Section has been going down almost every quinquennium since 1893. This is attributed to a larger number of assurers being life abstainers, and to an increasing number being the children of abstainers. The results are strongly in favour of the abstainers.

MILITARY SANITATION AND HYGIENE.—If the South African War, like all wars, was productive of misery and sorrow to many, it must at least be given the credit for having brought the Army into very close relationship with the nation. The public began to study the soldier and to take an interest in his doings.

The dictum that an army moves upon its belly still holds; but we have risen to the further conception that the belly must be a healthy one. It is therefore not surprising that the all-important subject of military sanitation and hygiene should excite interest, and we make no apology for noticing a work¹ on this subject, which has just appeared.

¹ *Military Sanitation and Hygiene*, by E. Blake Knox, B.A., M.D., D.P.H., Captain R.A.M.C. With 21 illustrations. London: Baillière, Tindall & Cox. 1911.

The contributions to bacteriology, and so towards prevention of disease, which have been made by members of the medical service of the Army are known to all our readers; but the latter may not be aware of the importance which the Army Council attaches to the subject of preventive medicine. Not only is the Army surgeon trained to be a sanitarian, but even a cursory dipping into official military books will show that the principles of hygiene and sanitation form part of the studies of the combatant officer, and by him are instilled into the men under his command. In pursuance of this policy the Army Council issued some four years ago the *Manual of Sanitation in its Application to Military Life*. Those who are interested in the matter cannot do better than read this *Manual*. A pamphlet of some fifty-two pages, it is an admirable exposition of the subject.

It has been said by some officers that the soldier is so much looked after while in the Service that on his return to civil life he is apt to be very helpless. This may be true as regards clothing and rations, but it is different in matters sanitary. Here he is actually ahead of his civilian brother, who, in the language of a well-known medical officer of health, "knows no more of sanitary matters than to 'pull the handle' and the sanitary authority does the rest." Towards helping officers in their duty of instructing the soldier, various unofficial books on military hygiene have been published. These are fuller than the official *Manual*, and are more or less freely illustrated. Lieutenant-Colonel Firth's little book (Churchill, 1908), and Lieutenant-Colonel Caldwell's larger volume (second edition, Baillière, Tindall & Cox, 1910), are well known. Another work has just been published by Captain Blake Knox. In this little volume, of pocket-book size, we have a careful account of the subject. The author describes the medical inspection of troops in barracks and the sanitary inspection of barracks, and then proceeds to consider the principles which underlie the construction of hygienic barracks. He next deals with the disposal of excreta and sewage from barracks. This chapter and the next two, on camp sanitation, conservancy and other arrangements, occupy considerable space. Water-supplies in camps are taken up in detail, as also food, clothing, equipment and bedding of the soldier. Marching, physical efficiency, disinfection, and sanitary reports all receive due notice, and in an appendix are samples of examination papers set for officers of R.A.M.C. who are going up for promotion.

We have gone into the contents of this volume pretty

thoroughly, and we feel that, while it is perhaps rather more than the soldier may be able to digest, it is an excellent presentation of the principles and practice of military sanitation. It is plainly written, and, while presumably it is primarily intended for medical officers, it is well within the comprehension of combatant officers, who cannot but be better for perusing it. In these days when "Efficiency" is the watchword, not only in the regular forces, but likewise in the Territorials, the medical officer must be well-versed in the matters to which the author refers, and we commend the volume to his notice. Captain Blake Knox does not pretend to substitute this work for those larger tomes on general sanitation and hygiene. His aim is to provide the reader with help in training his men. Incidentally, the officer will find the volume of great assistance in preparing for promotion examinations. Lastly, all who are interested in sanitation generally will profit by learning from the present volume how sanitary measures are adapted to the exigencies of military service.

NEW PREPARATIONS, &c.

From Messrs. Menley & James, Limited.

Glidine.—This is a fine white powder, with practically neither taste nor smell. It is claimed to be a pure vegetable protein, which may be added to various articles of food to increase their nutritive value. It is said to contain lecithin, and to be practically free from carbohydrates.

Bromoglidine, *Iodoglidine*, and *Ferroglidine* are compounds of bromine, iodine, and iron with glidine; in *Arsan* and *Luesan* glidine is combined with arsenic and mercury respectively. These compounds are all put on the market in the form of tablets, one or two of which constitute a dose.

Iodex is an ointment containing 5 per cent of iodine in the free state. It is dark greenish in colour, but on being rubbed into the skin the colour disappears and the skin is not stained. It is claimed that the iodine in this form does not irritate the skin in any way, and experiment bears this out.

From Messrs. Burroughs Wellcome & Co.

Wellcome Brand Concentrated Diphtheria Antitoxin.—In this serum 1,000 units are contained in 1 c.c. or less, so that the bulk of serum required to be injected is much less than formerly. This concentration is stated to be brought about by salt precipitation. The serum is contained in the usual convenient sealed glass vials issued by this firm. It should be of marked service.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1910-1911.

MEETING V (*continued*).—16TH DECEMBER, 1910.*The President, PROFESSOR ROBERT MUIR, in the Chair.*

V.—DR. J. H. TEACHER showed—

1. *A specimen illustrating regeneration of the liver.*

S. E., aged 5, was admitted to the Glasgow Royal Infirmary, under Dr. G. S. Middleton, suffering from jaundice with enlarged liver. Diagnosis: biliary cirrhosis.

Three months before admission patient's mother noticed her becoming yellow. Nothing further was noticed till about a week before admission, when she became much yellower and complained of pain in the abdomen after eating. There was diarrhoea, and the stools were soft and whitish-yellow in colour. The urine was high coloured, and contained bile-stained casts. She was very listless, and had lost much weight.

Great enlargement of liver and spleen was found, the liver dulness, from palpable edge to limit of percussion, measuring in the umbilical line 4 inches, and in the axillary line 5 inches. In the middle line the edge was palpable 3 inches below the xiphoid. The spleen extended $2\frac{1}{2}$ inches below costal margin.

30th September, 1909.—Dismissed. Colour almost normal, and liver and spleen, though palpable, very much reduced in size. Treatment was with $\frac{1}{4}$ gr. doses of calomel.

6th December, 1909.—Re-admitted with all her old symptoms and the liver and spleen almost as large as before. She was fairly well but listless till the evening of 12th December, 1909, when she turned suddenly ill and screamed out frequently. At first it was thought that the pain was due to the liver condition, and poultices were applied but without relief. She became unconscious, with retraction of head, and

the pupils alternately contracting and dilating irrespective of light. She was very noisy. No paralysis was noticed. At 9 o'clock she was quite comatose. No Cheyne-Stokes breathing. Pupils did not react to light. Muscles flaccid. No facial paralysis evident. Died at 9.10 A.M.

Summary of post-mortem examination (15th December, 1909).—Extremely fibrous liver, with irregular tumour-like masses of liver tissue through it. Tubercular mesenteric glands.

External appearances.—The body was considerably emaciated, and the belly was remarkably protuberant. Rigor mortis was slightly present in the legs. The body generally was jaundiced, and the conjunctivæ were yellow.

Thorax.—Pericardium was healthy, and contained about 3 oz. of clear bile-stained fluid. The heart showed no lesion.

Lungs.—With the exception of a few areas of collapse they showed nothing abnormal.

There were some moderately enlarged mediastinal glands, but they were not caseous.

Abdomen.—Contained a considerable quantity of clear bile-stained fluid.

The liver appeared somewhat enlarged for the size of the child and dense in consistency. The general outline of the organ was fairly well preserved, but there were large nodules of dark greenish-yellow colour projecting from it at various points. These were smooth on the surface, tending to be globular in shape, and were much softer than the liver generally. In section, the structure, which preserved the form of the liver, was of a pale greyish colour and fibrous consistence. Throughout the organ there were masses of greenish-yellow soft tissue, apparently bile-stained liver, and the nodules seen externally were of the same composition. There was œdema of the brain.

Microscopic examination showed that the pale tissue which preserved the outline of the liver consisted of rather dense connective tissue, with abundant bile-ducts scattered through it, but no hepatic tissue. This composed a very large part of the entire liver. The greenish-yellow nodules varied greatly in size; the larger masses were principally situated in the posterior part of the liver. They were composed of liver tissue, somewhat irregularly disposed, with distinct bands of connective tissue between the lobules. In parts, however, there was very little of the lobular arrangement to be made out. There was abundant evidence of proliferation of the liver cells in the form of large multinucleate cells. There

was a considerable amount of fatty change and biliary pigmentation.

Conclusion.—The case appears to have been one of some inflammatory condition of the liver, with great destruction of the hepatic tissue, which was subsequently regenerated in the form of rounded masses by hyperplasia, probably of surviving islets of liver cells. A very similar condition has been described following recovery from acute yellow atrophy. (W. G. MacCallum, in vol. x of *Johns Hopkins Hospital Reports*, and others.)

2. Hyperplasia of liver tissue following extreme venous congestion.

C. M'R., aged 7, was admitted to the Glasgow Royal Infirmary on 3rd March, 1909, under the care of Dr. M'Kenzie Anderson. Died, 29th July, 1909.

Patient had rheumatic fever five years ago, with cardiac complications. After she got up, her face and legs swelled, and she spent most of her time since then in bed, suffering from swelling of the legs, body, and face, breathlessness, &c. While in the ward the patient was never able to lie down, was always very livid about the face, and had large pulsating veins in the neck. Cyanosis was so marked a feature of the case as to suggest a congenital condition. Both heart and liver were greatly enlarged.

Summary of post-mortem examination (29th July, 1909).—Cardiac hypertrophy and dilatation, hydro-pericardium, ascites, mitral regurgitation, chronic venous congestion, broncho-pneumonia of right lung. Liver showed extreme venous congestion, with large tumour-like nodules.

External appearances.—There is swelling of the abdomen, and œdema of dependent parts.

Thorax.—There is marked bulging forwards of the anterior thoracic wall. No part of either lung was visible from the front, owing to the enormous enlargement of the cardiac area. There were 5 or 6 oz. of clear fluid in the pericardial sac. The heart, which weighed $11\frac{1}{4}$ oz., was hypertrophied and greatly dilated. The aortic and pulmonary valves were healthy and competent. The mitral orifice was dilated, and the valves were probably insufficient to close it. There was also some adhesion between the groups of chordæ tendinæ, but no definite stenosis or deformity of the cusps.

Abdomen.—Contained a large amount of clear ascitic fluid. The liver showed an extreme degree of chronic venous congestion and fibrous induration. The external surface showed

a nodular irregularity, which suggested the presence of tumours in the organ. On section it presented an extraordinary appearance, being studded with pale yellow and white rounded masses like tumours set in a ground of advanced nutmeg liver.

Histologically there was found to be very advanced chronic venous congestion, with much atrophy of the liver tissue and cyanotic induration. This condition ceased almost completely at the edges of the yellow nodules, which consisted of hepatic tissue arranged in lobules, which were much above the normal size, and showed pronounced fatty change in their peripheral parts. There was very little venous congestion in these areas. No evidence of active proliferative change on the part of the liver cells could be made out.

The condition appeared to be one of extreme compensatory hyperplasia of certain areas of liver tissue in an organ which had undergone much atrophy owing to chronic venous congestion.

3. Case of rupture of a papillary muscle of the left ventricle of the heart.

J. S., aged 64, lavatory attendant, was admitted to the Glasgow Royal Infirmary on 24th April, 1909. He had been picked up unconscious, and brought in at once. The pupils were dilated and fixed. The action of his heart was irregular, and the sounds were weak. He died ten minutes after admission. There was no examination of his urine.

He had always been a sober, temperate man, and had worked at his trade of stonemason until two years ago. He had been feeling ill for about a week, and had told his friends that he felt sure there was something wrong with his heart. He had scarcely eaten anything for about a week, and had become sallow and rather yellow in complexion.

Abstract of report of post-mortem examination.—The body was that of an old but strongly built and well-nourished man.

Thorax.—The lungs were extremely œdematous. They were universally covered by old fibrous adhesions. There were some small cretaceous masses and old solidifications, possibly due to silicosis. The bronchi were fairly healthy. Heart was large and firm, showing marked hypertrophy of the left ventricle. The valves showed very slight thickening. The orifices were of normal size. The myocardium was slightly paler than normal, and the fibres seem to separate readily, and on manipulation the muscle seems to be abnormally brittle. To the naked eye there was no definite evidence

of fatty change, myocarditis, or infarction. The coronary arteries were highly atheromatous. The left papillary muscle was completely torn across about the middle, and the edges had a lacerated, blood-infiltrated appearance, and there were hæmorrhagic streaks for some little distance on either side of the tear. The edges of the tear were slightly curled inwards.

The liver was intensely congested and œdematous, the spleen somewhat enlarged and deeply congested, and kidneys of advanced granular contracted type.

The meninges were highly œdematous, and there was distinct chronic thickening of the pia arachnoid. The surface of the brain was congested and œdematous. The vessels at the base showed fairly well-marked atheroma.

Microscopic examination.—Sections were prepared from a portion of the larger part of the papillary muscle and adjacent ventricular wall, and of a small portion of the smaller division of the papillary muscle. Sections of the ventricular wall near the papillary muscle, and from a small columna carnea, were cut by the freezing process, and stained with Sudan III. They showed an excess of yellow pigment and fine yellow granules, which seemed to be fatty. Sections stained with osmic acid showed slight fatty degeneration.

The ruptured end of the papillary muscle was found to be covered with white thrombus, containing a few red blood corpuscles and numerous leucocytes. There was an abundant polymorphonuclear leucocytic infiltration between the ruptured muscle fibres. Close to the rupture, the muscle fibres showed various stages of degeneration. Nearly all were shrunken, and had lost their striation and nuclear staining, and throughout the papillary muscle there were irregular areas in which the muscle showed similar changes and leucocytic infiltration. The rest of the muscle was fairly healthy in appearance; striation and nuclear staining being fairly well preserved, but the fibres were rather larger than normal. Pigment was excessive in amount. The blood-vessels appeared to have an excess of connective tissue round them, and some of them showed hyaline degeneration of the whole wall, but no thrombosed vessel was found.

Conclusions.—(1) The condition was one of patchy infarction of the papillary muscle. (2) From the condition of the thrombus on the end of the muscle it was clear that rupture had occurred, in the part examined, some considerable time before the death of the patient, and the condition of infarction may well have commenced about the time he first complained,

viz., a week *ante-mortem*. Possibly there was partial rupture in the first place, and death occurred when it became complete.

4. *Case of syphilitic aortitis.*

Mrs. S., aged 33, described as a vagrant, was admitted to the Glasgow Royal Infirmary on 10th July, 1910, in an unconscious condition, with occasional convulsions which appeared to be uræmic. No further information was obtained. She died next day.

Abstract of report of post-mortem examination.—The body was that of a well-built and well-nourished woman. There were tattoo markings on both arms, and several small non-pigmented and superficial cicatrices about both wrists, one on right thigh, and one about the middle of right leg on the anterior surface. There was no cedema.

The lungs were œdematous but otherwise healthy. The heart, normal in size with abundant epicardial fat and considerable fatty infiltration of both ventricles. There was diffuse thickening of all the coats of the aorta at its commencement, and one large slightly raised atheromatous patch with distinct tendency to cicatricial contraction. The thickening extended the whole length of the arch of the aorta. There was acute nephritis, but nothing else of note in the abdomen.

Head.—There was a slight thickening and cedema of the meninges. The vessels at the base of the brain appeared quite healthy. Nothing was found in the brain itself.

Microscopic examination of a portion of the aorta showed a very striking infiltration of the tunica media, with areas of round cells and giant cells of the type commonly seen in tubercles. There was well-marked "endarteritis proliferans," and great destruction of the elastic tissue of the tunica media. There was some tendency to fibrosis of the cellular areas, but no caseation. Sections were examined for tubercle bacilli with negative result. Unfortunately the condition was recognised too late for application of Levaditi's method of staining for spirochætes. The condition is typical of what has been described by Chiari and others as syphilitic aortitis.

5. *Specimen of hæmorrhage into the pons varolii due to head injury.*

N. M'G., a farm labourer, was admitted to Glasgow Royal Infirmary, under Mr. J. Hogarth Pringle, on 1st December, 1910, in an unconscious condition, having fallen head first

down a steep bank into the bed of a stream. There was a large scalp wound above and behind the left ear.

Post-mortem examination (2nd December, 1910).—There was a fracture with slight depression in the squamous part of the temporal bone, and a fissure extending through the petrous portion and sella turcica into the right middle fossa. There had been much subdural hæmorrhage from small lacerations of the frontal and parietal lobes of the cerebrum and the right lobe of the cerebellum.

On opening the fourth ventricle, several dark streaks, suggestive of hæmorrhages into the substance of the pons, were seen near the upper end of the floor, and on incision numerous small lacerations were found principally in the upper two-thirds of the pons. There was very little laceration around the aqueduct of Sylvius, and none in the medulla or central parts of brain and cerebellum.

6. Specimen of multiple minute hæmorrhages into the pons varolii.

W. L., aged 64, car washer, was admitted to Glasgow Royal Infirmary, under the care of Dr. T. K. Monro, having had a fit on the street. Disease: nephritis. On examination his urine was found to be loaded with albumen. He had had several fits at varying intervals during the month preceding admission, and about a fortnight before admission he had sudden failure of vision.

On admission there was œdema of the feet and legs and puffiness under the eyelids. There was a faint V.S. murmur at the apex, and the superficial area of cardiac dulness was enlarged. The patient at first made a little progress, but he became more lethargic in the beginning of February, and about the 15th fell into complete coma, and he died on Monday morning, 20th February.

Post-mortem examination (21st February, 1910).—Chronic interstitial nephritis. Uræmia.

External appearances.—The body of a very done looking man. Lower limbs not œdematous.

Thorax.—Heart was enormously hypertrophied—the left ventricle being chiefly affected. There was advanced patchy atheroma of the aorta and coronary arteries.

Abdomen.—The kidneys showed extreme cirrhosis of the small red type, with marked thickening of the blood-vessels.

Head.—There was pronounced thickening and some œdema of the pia arachnoid. The arteries showed advanced atheroma. The substance of the brain was œdematous. There were no

hæmorrhages or softenings in the basal ganglia, but there were numerous red dots like minute hæmorrhages scattered through the upper part of the pons varolii. Microscopical examination showed them to be minute hæmorrhages, apparently quite recent.

VI.—DR. S. J. M. CAMERON showed specimens from the following cases:—

1. *Rupture of the uterus through a Cæsarean scar.*

The patient from whom this specimen was obtained had twice undergone Cæsarean section and her pelvis was contracted. On both occasions no attempt had been made during the operation to divide or ligate the Fallopian tubes. Impregnation again occurred, and when the patient had reached the eighth month of pregnancy she was seized with pain in the lower abdomen. As the pain continued and her condition was becoming worse, she summoned her medical attendant, who ordered her removal to hospital. Ten minutes after her admission she died, the cause of death being apparently rupture of the uterus. It was evident on her admission that intraperitoneal hæmorrhage was going on. The surface of the body was clammy, the pulse could not be felt, and the mucous membrane of the lips was blanched.

On abdominal palpation the child could be easily felt on the right side of the abdominal cavity, while the uterus could be detected lying at the brim of the pelvis on the left side.

On vaginal examination the cervix was found to be tightly contracted, and no blood issued from the canal. At the *post-mortem* examination, the child, the unruptured membranes, and the placenta were found lying free in the abdominal cavity, although the lower pole of the membranes still remained attached to the interior of the uterus. A large quantity of blood filled the abdominal cavity, and the uterus itself, in a well-contracted condition, occupied the upper part of the pelvic cavity.

Since this specimen was shown, Dr. Cameron has operated on another case where a woman who had undergone Cæsarean section was not sterilised. Pregnancy subsequently occurred, and Dr. Cameron performed Cæsarean section on her as soon as labour commenced. It was discovered on opening the abdomen that at the uterine scar a thin window of peritoneum was the only structure separating the abdominal cavity from the interior of the uterus. The membranes protruded through

the scar, causing the window of peritoneum to bulge into the peritoneal cavity. Rupture was in progress. After the child had been extracted through a fundal incision the uterus was removed by supravaginal hysterectomy. The child lived, and the mother made a satisfactory recovery.

2. *Twin ectopic pregnancy.*

This specimen is a very rare one. It was removed from a young woman who was much collapsed from intraperitoneal hæmorrhage. On opening her abdomen a small artery in the tube wall was spouting briskly, so that the abdominal cavity was almost filled with blood. After the tube had been removed and hardened in formalin it was examined.

The tips of some villi were found projecting through the tube wall into the peritoneal cavity. As the blood had escaped into the abdominal cavity freely through this perforation, the membranes and tubal tissues had not been disturbed by the hæmorrhage. Dr. Shaw Dunn, on cutting across the tube, found that two fœtuses were present. Each fœtus will be observed to possess a distinct amniotic sac, while a considerable space exists between the amniotic sacs and the inner surface of the chorion. There are two distinct umbilical cords, but the cords fuse as they enter the substance of the placenta. It will be observed that the fœtuses are much smaller than intra-uterine fœtuses of similar age (7 weeks). The patient made an excellent recovery.

3. *A large suppurating hydatid cyst growing from the liver of a girl, 10 years of age.*

The patient from whom this cyst was excised was a thin, but apparently robust, little girl, 10 years of age. Such was the size of the cyst that it filled the pelvic cavity as well as the entire abdominal cavity.

On abdominal examination the abdomen was observed to be greatly distended by a tumour of regular outline. On percussion a tympanitic note was present in both flanks, but elsewhere the percussion note was flat. It was evident that the tumour was cystic and possessed a definite margin. An anæsthetic having been administered, the tumour was found to fill the pelvic cavity. The mass was also discovered to be attached to the uterus, and, considering all the physical signs, the case was diagnosed as one of sarcomatous ovarian cyst. On opening into the abdominal cavity the surface of the cyst was found to be firmly attached to the parietal peritoneum, to the omentum, and to the pelvic viscera. When the lower

margin of the tumour could be examined it became evident that it had not arisen from any of the pelvic organs, although it was firmly attached to the uterus, bladder, and pelvic peritoneum. On tracing the cyst upward it was found to spring from the substance of the liver. As the cyst was too large to deliver through the abdominal wound, a trocar was plunged into the interior of the cyst, after the general peritoneal cavity had been protected by packing. Immediately a large quantity of pus poured out, and after the cyst had been emptied the perforation was clamped while the cyst was being drawn into the wound. An incision was then made across the base of the sac, about half an inch from the liver substance, in order to remove the mass of the cyst. Pure carbolic was then applied to the lining of the stump, and after this had been gathered up with a purse-string and mattress sutures, the stump was stitched into the upper part of the abdominal wound. The patient made an uninterrupted recovery. This patient came from Shetland, where hydatid cysts seem to be of fairly common occurrence.

Dr. Haswell Wilson made a careful examination of the cyst, and had no difficulty in recognising the characteristic structures met with in hydatid cysts.

4. A large cervical fibro-myoma.

This tumour is exhibited because of its great size. The patient was sent to me by Dr. David Watson, as she had been bleeding profusely and was suffering great pelvic discomfort. On examination the entire pelvic cavity was found to be filled with a fibro-myomatous tumour, which was quite fixed. As I have previously demonstrated that almost all cervical fibro-myomata possess a distinct bed from which they can be readily enucleated, I determined to perform myomectomy. Accordingly, the uterus was divided into two halves by a median longitudinal incision, thus exposing the surface of the fibro-myoma, which occupied a well-defined nest in the cervix. Owing to the excessive size of the tumour it could not be removed from the pelvic cavity until its bulk had been diminished. Therefore, wedges of the neoplasm were excised until the tumour was small enough to permit of its extraction by means of stout volsella fixed in its substance. The uterus was then removed, and, after the expanded cervix had been packed with gauze, its upper edge was fixed all round by catgut sutures to the angle of the wound. The gauze was removed on the third day, and the patient made an uninterrupted recovery.

5. *Large cervical fibro-myoma and a three months' gravid uterus.*

This specimen was removed from a primipara who thought she was three months advanced in pregnancy. She suffered from great pelvic discomfort, and when a vaginal examination was made the pelvis was found to be completely filled by a large cervical fibro-myoma. It was obvious that if pregnancy were permitted to advance, the patient would be exposed to much discomfort and risk, as the tumour was already exercising considerable pressure on the pelvic viscera and nerve trunks. Consequently, the patient entered a nursing home, where I removed the uterus, together with the cervical fibro-myoma, which is of a subperitoneal type. The patient, despite the difficulties encountered during the operation, returned home quite well a month afterwards. It will be observed that the fœtus is about three months advanced in development.

6. *An osteomalacic pelvis.*

Briefly, the history of the case from which this very characteristic pelvis was obtained is that the patient, a vi-para, had been delivered with forceps in her first and second confinements. Her third pregnancy, however, was over in the space of fifteen minutes.

She first came to the Maternity Hospital in the year 1905, when she was delivered by forceps after a somewhat difficult pull to get the head through the brim. At this time two "promontories" were felt, the diagonal conjugates of these being given as 4 inches and $3\frac{3}{4}$ inches. The child's head lay in the transverse, with the anterior parietal presenting, and after delivery the temporal bone was found to have been depressed by the promontory.

In 1907 she returned to hospital again in poor condition. She was pale, emaciated, and much troubled by severe pains, which prevented her from extending her legs or separating her thighs. Although the diagonal conjugate at this time was found to be $2\frac{3}{4}$ inches, yet the head came through quite easily (obviously the pelvic bones were greatly softened at this time).

In the summer of 1910 the patient was again admitted to hospital, in a dying condition. She had been long in labour, and attempts had been made to deliver her at her own home. Her pelvic contraction was now so great, and the bones were so firm, that it was almost impossible to get the hand into the pelvic cavity. Cæsarean section would have been the

ideal method for accomplishing delivery, but this was out of the question, as the woman was dying and the child was dead. Therefore, despite the difficulties associated with a destructive operation on the child, an attempt was made to extract it, but the mother died just as the child's body was born.

It is questionable if the child could have been removed, except in small parts, unless the symphysis pubis had parted immediately before delivery. You will observe that the pelvis is distorted in a typical manner, but it is unnecessary to enter into a detailed description of the pelvis here. This specimen has been exhibited to-night, as well-defined cases of osteomalacia are extremely rare in Britain.

(The report of this Meeting will be continued in our next issue.)

REVIEWS.

Manual of Bacteriology. By ROBERT MUIR, M.A., M.D., and JAMES RITCHIE, M.A., M.D. Fifth Edition. With 174 Illustrations in the Text, and 6 Coloured Plates. London: Henry Frowde and Hodder & Stoughton. 1910.

THE fifth edition of this well-known and deservedly popular *Manual* is now before us.

It is not possible to enumerate all the changes and additions which the authors have made in the present edition: they are to be found throughout the volume. But we would cite as an example the new chapter on examination of serum, and allied subjects. There is a considerable amount of new matter on the subject of agglutinins, opsonic methods, bactericidal methods and deviation of complement; and for the general reader nothing could be more concise, and at the same time intelligible, than the description of Wassermann's reaction.

As another example of new matter, and one which will appeal to clinicians, we have in the subject of epidemic cerebro-spinal meningitis a very good account of recent work in connection with anti-sera. It is of interest to note here the favourable results which have been obtained by Mackenzie and Martin in treatment by this means.

The pathological conditions associated with spirochætes are grouped together in a new chapter. These comprise African tick fever, syphilis, yaws, &c.; and the present arrangement is very convenient for reference.

Another new feature is furnished by the coloured plates, depicting stained cocci, bacilli, malarial parasites, &c.

As a student's manual this work cannot be too highly praised. It is not merely a collection of facts to be committed to memory for examination purposes. It gives an account of the subject, and if properly read will train the student in the principles of bacteriology, and so provide him with a scientific foundation for much of his clinical work.

The volume is a veritable storehouse of information, and will prove a reliable guide to all who are working at bacteriology. We cordially recommend it to our readers.

A System of Medicine by Many Writers. Edited by SIR CLIFFORD ALLBUTT, K.C.B., M.A., M.D., LL.D., D.Sc., F.R.C.P., F.R.S., F.L.S., F.S.A., and HUMPHRY DAVY ROLLESTON, M.A., M.D., F.R.C.P. Vol. VIII: Diseases of the Brain and Mental Diseases. London: Macmillan & Co., Limited. 1910.

IN the present edition of this work diseases of the nervous system occupy the whole of this volume and part of the previous one, while diseases of the skin, which formerly found a place in the eighth volume, form the subject-matter of the next and concluding volume of the *System*.

Dr. Henry Head and Dr. Savage have assisted the editors in the sections on nervous diseases and mental diseases respectively.

The general treatment of the subjects is the same as in the former edition, but there are several new articles and some of the old ones have been rewritten and expanded. As the list of writers in this volume numbers thirty-seven, we must content ourselves with noting the more important alterations.

All forms of meningitis, except the tuberculous, have been included in one article written by Dr. Batten, and it, like that on acute polioencephalitis by the same author, is quite new.

Other new articles are that on recurrent paralysis by Professor J. Michell Clarke, and that on apraxia and agnosia by Dr. James Collier, the latter author having also revised the article on aphasia. The paper on occupation neurosis has

been rewritten by Dr. Head, and the senior editor has extended and largely rewritten his contribution on neurasthenia.

Without in any way casting reflections on the many other excellent articles, which space alone forbids us to mention, we would draw attention to the lengthy and more general chapter on the regional diagnosis of cerebral disease by Dr. Ferrier, which is worthy of careful study.

As in previous notices on this *System of Medicine*, we can warmly recommend this volume to our readers as quite in keeping with the rest of the series.

A System of Syphilis. In Six Volumes. Edited by D'ARCY POWER, F.R.C.S., and J. KEOGH MURPHY, F.R.C.S. With an Introduction by SIR JONATHAN HUTCHINSON, F.R.S. Vols. V and VI. London: Henry Frowde and Hodder & Stoughton. 1910.

OF the present two volumes of the *System*, Volume V contains articles on the affections of the skin, the eye, the ear, and the upper air-passages.

The article on the skin affections is by Drs. Phineas Abraham and Haldin Davis, and occupies more than half of the volume. After an interesting chapter on the historical and general aspects of the subject, the authors proceed to discuss the classification of the syphilides. Reviewing the various classifications proposed by different authorities, they refer to the modern tendency to discard all attempts at a rigorous classification, particularly since the recognition of the patho-histological identity of all syphilides and since the discovery of the spirochæte as the cause of the disease. They therefore consider the various forms under the headings of the "early" and "later" syphilides. This distinction is dwelt upon in the next three chapters. First of all, there are detailed descriptions of the eruptions which make their appearance at a comparatively early period in the course of the disease, viz., erythematous, pigmentary, and papular syphilides. There is much interesting matter on chromatic or pigmentary syphilides and depigmented spots. In the next place, the rarer forms of early syphilides, viz., vesicular, pustular, ecthymatous, bullous and squamous are considered. In this connection attention is directed to the varioliform syphilide, which has been mistaken for variola, and the guides to a correct diagnosis are indicated. Under the heading of "deep ecthymatous" there is a very

good description of rupia. The "later" syphilides do not occupy much space; their general characteristics are enumerated and their histology is set forth. The nodular forms are distinguished from the still later gummatous manifestations; but the writers admit that "it is often difficult to draw the line between a nodular lesion occupying the true skin and a gummatous growth which specially develops in the sub-cutaneous tissue, and secondarily involves the corium, and the two forms pass insensibly into one another" (p. 88). The descriptions of both these forms are very good. Mention is also made of the elephantiasic condition which occasionally accompanies tertiary syphilis of the lower extremities.

A short chapter on affections of the hair and nails is followed by one on the diagnosis of cutaneous syphilides. This is a most instructive and important chapter, and in it many conditions are considered. Perhaps the most important of these is tuberculosis and lupus; and the authors devote careful attention to the details which make for a correct diagnosis. In this connection they mention the possible presence of leukoplakia on the neck as a valuable guide.

Syphilides of the mucous membranes are next considered, and in this chapter considerable space is given to the diagnosis of buccal syphilides from herpes. Leukoplakia also receives detailed notice, and its importance in relation to subsequent malignant disease is emphasised.

Congenital syphilides, another very important subject, is treated of in a special chapter in which the details of diagnosis are fully considered.

A short chapter on treatment completes the article. The various *local* applications are described, and detailed directions as to their employment are given. At the commencement of this chapter there is a short reference to Ehrlich's remedy; and in an appendix some details are furnished as to its usefulness and the technique of its administration.

The article is illustrated by thirty plates, most of them in colour, which are of great beauty and show marked fidelity to nature.

The article on ocular syphilis has been written by Mr. Devereux Marshall. It is extremely interesting and well written. The writer lays stress on the extensive field covered by irido-cyclitic affections, and the caution with which one must give a prognosis as to vision. He also speaks very emphatically on the subject of nasal duct obstruction.

Aural syphilis, by Mr. C. Ernest West, and syphilis in the upper air-passages, by Dr. St. Clair Thomson, are the

concluding articles in the volume, and are both well done. These articles are both illustrated by many plates, which are good representations of the lesions to which they refer.

The skin manifestations of syphilis are of great importance to all practitioners; and there is little doubt that this volume will obtain the wide popularity which it merits.

Volume VI is concerned with syphilis as it is met with in the Services, and the articles in it are by medical officers of the Navy and Army. Apart from the frequency of the disease in our sailors and soldiers, and such frequency is in the Army rapidly diminishing, it has to be borne in mind that medical officers are in a much better position than their civilian brethren for continuous observation of the disease and of the effects of treatment. For this reason, therefore, the contributions of naval and military writers to the literature of the subject are of peculiar value, and a volume such as the present must command attention from students of venereal disease.

Sir Alfred Keogh contributes an introduction to the volume, in which he lightly touches on the first appearance of syphilis in military history, during the campaign of Charles VIII of France, in Italy, and its subsequent dissemination by the mercenary soldiers who formed so large a portion of his army. The importance of syphilis from a military standpoint, and the interest with which its problems are considered by the Medical Service of the Army, are then referred to. A brief mention of the relatively high frequency of the disease in the British Army, and the methods of repression formerly tried, is followed by a reference to the improvement which has taken place of late years. Sir Alfred believes that still greater improvement will follow, "based on a higher ideal of conduct, and a cleaner method of life, not on an acceptance of evil as a necessity, and an attempt to undo its effects by a superadded injustice."

The first article, by Lieutenant-Colonel C. H. Melville, deals with the history and epidemiology of syphilis in the more important armies. This article, by the Professor of Hygiene at the Royal Army Medical College, is most instructive. The writer, after an account of the advent of syphilis into Europe, compares the rate of syphilis in the British Army with those of the United States and of the Continent of Europe. He then proceeds to sketch the principles of prevention in these armies, and, after a consideration of the effect of preventive means and their efficacy and propriety, he sums up by

declaring, and his opinions are backed by statistics, in favour of a "high ideal." This means education of the young soldier; and such education will do two things. It will point out the possibility of attaining the high ideal, and at the same time indicate the danger of breaking through. Lastly, for the "hardened sinner" there must be the scourge of discipline.

Captain L. W. Harrison writes on the pathology and microbiology of syphilis as applied to the public services. He gives an admirable account of the *spirochete pallida*, its characters and its distribution in the tissues, and then he takes up the problems of immunity and prophylaxis. This leads to an exhaustive description of the Wassermann reaction and its application. The article is an excellent review of our knowledge at the present time. There is an ample bibliography appended: but the author is able to speak also from personal experience.

The clinical course and treatment of syphilis in the Army is the subject of an article by Major C. E. Pollock. Beginning with the various types of syphilis met with in Army practice, Major Pollock then passes to the diagnosis. After referring to the difficulties attending laboratory diagnosis, he discusses clinical evidence. As regards treatment, he looks on mercury as still our chief remedy; and he goes at some length into the practical points to be attended to in connection with putting a man on a mercurial course. The iodides are briefly noticed; and perhaps the reason for this is that "in the British Army of to-day it is rather unusual to meet with tertiary syphilis." In the concluding chapter of this article the writer gives an outline of the management of a case. There are several appendices to the article, giving formulæ, schemes of treatment, &c. This article is instructive principally as showing the lines on which syphilis is treated in the Army: but there is much in it that will interest the civilian practitioner.

The remainder of the volume is concerned with syphilis in the Navy. Surgeon Fiske, U.S.N., contributes a short article, in which details of prophylaxis in the U.S. Navy occupy considerable space. The epidemiology of syphilis in the Royal Navy is written by Fleet-Surgeon Mourilyan. One interesting fact is suggested by statistics, viz., that the Contagious Diseases Acts had a decidedly beneficial effect on the ratio: since their abolition the improvement has not been so maintained (p. 325). But the writer appears to be hopeful of a better state of affairs in the future, if one may judge from the various improved conditions of life afloat, whose general import is to "raise the moral tone" of the bluejacket (p. 414). The article

concludes with a description of the different types of the disease in different naval stations. Staff-Surgeon Bushe writes on the practical treatment afloat in the Royal Navy, and amongst other matters gives details of prophylaxis. The volume concludes with a short article, by Staff-Surgeon Yetts, on the value of Justus' test.

These two volumes complete the *System of Syphilis*, a publication that embraces all that is known at the present day concerning this interesting and widespread malady. The history of its first appearance in Europe; the ravages which it made in its victims; the gropings towards a cure, leading empirically to the establishment of mercury as a specific; the careful observation of the multitude of pathological lesions which manifest themselves at different periods in those who have become infected; the incessant labours of pathologists, culminating in the discovery of the *spirochæte*; and, most recent of all, the work of Ehrlich and Hata in the domain of therapeutics, are all described in the volumes of the *System*. No one can say that there is no more work to be done in this field; but no future worker can neglect these volumes. Written as they are by many collaborateurs, the reader must be prepared for some overlapping and inevitable repetition. In each article, however, he will find individual features and independent opinions. In our notices of the different volumes we have indicated the scope of the various articles. We would, in this concluding notice, congratulate the editors on the completion of a great work, and the publishers on the sumptuous way in which they have presented that work to the reader. The *System* is worthy of the best traditions of the medical department of the Oxford Press.

Wounds in War: The Mechanism of Their Production and Their Treatment. By COLONEL W. F. STEVENSON, C.B., K.H.S., R.A.M.C.(Retired). Third Edition, with 137 Illustrations. London: Longmans, Green & Co. 1910.

SINCE the appearance, in 1904, of the second edition of Colonel Stevenson's well-known work, the surgical history of the cases which were observed in the Boer war has been completed; the Russo-Japanese war has come and gone; the means employed for the succour and treatment of sick and wounded in war have lately undergone much alteration; and the Geneva Convention has been revised (1906).

As the author admits, much of the material afforded by the South African war, 1899-1902, has been unavoidably lost to the science of military surgery. Of the wounded officers and men (close on 23,000) treated during the war, he estimates that not more than 10 per cent of the cases were sufficiently recorded to be of use for statistical purposes, and he thinks that they tend to bring out, in some instances, results probably better than complete returns would show.

Regarding the Russo-Japanese war, the medical and sanitary reports by Lieutenant-Colonel Macpherson have been freely drawn upon.

The chief points in this edition are that to the statistics given in the former edition there are added those of the Boer and the Russo-Japanese wars. It is interesting to find that the death-rate amongst the wounded who reached field hospitals was considerably less in the Russo-Japanese than in the Boer war. In the latter it was 8 per cent; in the former it was 5·8 per cent on the Japanese side and 3·04 per cent on the Russian side.

The Geneva Convention of 1906 replaces that of 1864, and the author comments briefly on the differences between the two.

The author may fairly be said to have brought his book up to date, and we trust that for a long time to come the present edition may remain the standard work of reference for the officers of our military medical service.

Hæmoglobinuria. By AMBROSE E. C. CHARPENTIER, M.D. Durham, D.P.H., R.C.P. & S., L.R.C.P. Lond. London: Baillière, Tindall & Cox. 1910.

To those who are interested in hæmoglobinuria the present volume of about 100 pages will supply a useful guide to the subject. The bibliography is very comprehensive, the references dating from 1794 onwards, and they have been freely made use of in the text. The consideration of paroxysmal hæmoglobinuria occupies the greater part of the book, and the pathogenesis of the disease is discussed at some length, with special reference to the more recent observations on the subject. While more a compilation of recorded views than an original treatise, the book will serve a useful purpose by collecting many scattered facts into small compass. It is published at a very reasonable price.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE A. ALLAN, M.B., CH.B.

M E D I C I N E.

Hypopituitarism. By Earnest S. Cross, M.D. (*New York Medical Journal*, 15th October, 1910).—The writer considers that certain anomalies of growth connected with pituitary gland disease, the relations of which have so far been obscure, seem now to be in a fair way to be cleared up, thanks to the recent work which recognises the pituitary as a secreting gland, liable to functional over-activity and under-activity, analogous to the conditions possible in the other ductless glands.

The work of various investigators shows (1) that removal of the posterior lobe causes very little bodily disturbance; (2) that the products of the posterior lobe possess diuretic and blood-pressure raising properties; (3) that the removal of the anterior lobe in experiments on animals causes a definite alteration in the structure and functions of various parts of the body, so that this portion of the gland seems chiefly to be associated with the metabolism of fat, the growth of the body, the sexual activities, and to be bound up in some obscure way with the functions of all the other ductless glands.

This gives ground for believing in the possibility of the following theories:—

1. That hypersecretion begun in fetal or early life leads to gigantism.
2. That later, when only circumferential increase in size of the bones is possible, it leads to acromegaly.
3. That defective secretion from an early period produces a peculiar lack of physical development associated with adiposity, and known as "dystrophia adiposo-genitalis."
4. Defective secretion developing in later life gives rise to varying clinical pictures of adiposity and genital atrophy.

The writer emphasises the general infantilism so common in the third class, and cites the following case as an example of it:—

P. Y., æt. 22. Family history unimportant. She was a premature child, but fat and healthy. Growth very slow; anterior fontanelle open till age of 16, at about which time second dentition also took place. Menstruation never established. General health excellent: bright, cheerful, but preferring the society of children. Physical examination showed the following abnormalities:—Measures 4 feet 2½ inches in height. Much adipose tissue all over the body, the breasts in particular being very large. Complete absence of hair in pubic and axillary regions. Teeth infantile, widely spaced in places, and crowded in others. Pelvic organs and external genitalia infantile. Beyond some immaturity, mentally normal.

A skiagram taken to determine, if possible, the condition of the pituitary body, showed the sella turcica of relatively small size.—J. R. C. GREENLEES.

Frochlich's Syndrome in cases of Pituitary Tumour. By R. Ottenberg, M.D. (*New York Medical Journal*, 17th December, 1910).—The writer commences his paper with a full history and a pathological report of a case, the outlines of which are as follows:—

Patient, aged 64, admitted in moribund condition. He died almost at once, but in the *ante-mortem* clinical note he is described as very fat, with a nearly female swelling form, and a striking absence of hair growth. One of his relatives stated that he had been corpulent all his life; he had been married twenty years but was childless; he had been impotent and his marital relations most unhappy; eyesight had been bad and recently he had worn glasses; latterly he had frequent attacks of dyspnea, in one of which he had died.

Post-mortem examination.—Body of very fat man, weighing about 19 stones, and measuring 5 feet 3 inches in height. Neck organs very congested. Thyroid, very large; left lobe, 100 grammes; right lobe, 50 grammes; microscopically, a simple colloid goitre. Flat firm circular tumour, 5 cm. in diameter, in region of hepatic flexure of colon; on cross section total infiltration of intestinal wall; microscopically, adeno-carcinoma. Adrenals enlarged and microscopically thickening of cortex and medulla.

Genitals.—Penis only slightly atrophic. Prostate very small and hard; seminal vesicles small; testes atrophic, brownish on section, and microscopically showed a picture of advanced atrophy with no traces of spermatogenesis.

Brain.—Sella turcica greatly dilated by a hard tumour, about size of a large plum, attached by a thick pedicle to its anterior wall, and projecting into the brain like a mushroom. The whole tumour was calcified except several superficial parts; anteriorly it pressed on both optic nerves, posteriorly on the optic chiasma, and on the left side touched the tip of temporo-sphenoidal lobe. Microscopically, it had all the appearances of a benign fibro-adenoma. The hypophysis was pushed to one side, and weighed 0.57 gramme (normal weight in males between 60 and 70 is 0.6 gramme). Microscopically the anterior lobe showed a marked increase of connective tissue stroma, with enormous reduction of the parenchyma; no marked changes in the posterior lobe.

The writer considers that this case must be classed with those showing Froehlich's syndrome characterised by (1) adiposity; (2) loss of genital functions; (3) loss of secondary sexual characteristics, particularly of hair on face, axillae, and pubes, which generally occurs in cases in which the hypophysis is injured or destroyed.

Our present knowledge of the physiology of the pituitary gland and its literature is fully discussed, and then shortly summed up in the fact that there is some relation between the pituitary body and the functions of the sexual glands, of the thyroid, of the growth of bone, skin, and hair, and the deposits of fat. Thirty-six cases showing this syndrome are tabulated, and the theories as to its etiology discussed.

In conclusion, the writer states that a consideration of the present case, and of the other cases which have been reviewed, leaves him with the opinion that Erdheim's view as to the nervous origin of Froehlich's syndrome requires further proof, and that for the present the theory of an internal secretion should be retained.—J. R. C. GREENLEES.

A Case of Mixed-Cellled Sarcoma of the Pituitary Body, with Post-mortem Findings. By Mary O'Malley, M.D. (*New York Medical Journal*, 17th December, 1910).—The patient, A. T., female, coloured, aged 40, was admitted to hospital on 6th May, 1910.

From the information received, it seems probable that her first symptoms commenced about two months prior to admission, with severe frontal headaches, polydipsia, and occasional attacks of vomiting. About 1st April she stopped work and remained at home for medical treatment, and during that time suffered from unquenchable thirst and loss of appetite, but seldom vomited. Latterly, mental dulness and apathy supervened, and gradually consciousness became clouded, and she passed into a confused state, was very restless, and talked incoherently.

Physical examination was negative, but her blood on two occasions gave a positive Wassermann reaction. The psychic behaviour of the patient was peculiar; she was at times very restless and refractory, and had to be fed by

the stomach tube; there was great deterioration of intellect: facial expression demented. On 4th June she passed into a somnolent state, from which she could not be roused, and on 7th June died rather suddenly in a convulsion.

Post-mortem a large soft tumour was found at the base of the brain arising from or near the hypophysis. The growth extended longitudinally from the chiasma to the pons, laterally from one displaced optic tract to the other, and upwards to a little above the line of the anterior white commissure. Microscopically it showed all the characteristics of a mixed-celled sarcoma. That portion of the growth which filled the sella turcica showed the same structure, but the remains of the hypophysis were found lying compressed below it.

The signs of intracranial tumour shown by this patient were few; transient vomiting, headache, polydipsia, and subsequently mental dulness, with a terminal convulsion, were all that could be found. The fundus oculi was not examined. The absence of the symptoms which usually characterise pituitary disease was accounted for by the fact that in this case the anterior lobe of the gland was not involved.—J. R. C. GREENLEES.

Active Lobar Collapse of the Lung after Abdominal Operation, with a Report of Five Cases. By W. Pasteur (*Archives of the Middlesex Hospital*, November, 1910).—The condition described is to be distinguished from post-operative pneumonia, and is an active deflation of one or more lobes of the lung, in the absence of any obstruction of the air-passages, and is probably due to disturbance of the muscular mechanism of respiration. The operations in the five cases were—for radical cure of hernia, abscess following hernia operation, left salpingectomy, cholecystectomy, and cholecystotomy. In each case the collapse occurred on the side of the operation wound. The onset is frequently sudden, suggesting pulmonary apoplexy. There is sudden dyspnoea and cyanosis, with more or less pain in the lower part of the chest. Cough is common, but is not a marked feature, and rusty or blood-stained expectoration has not been met with. There is immobility of the affected side, with dulness and diminished breath sounds, and weak tubular breathing. The other side presents signs of compensatory emphysema.

The most striking feature is the shifting of the apex-beat *towards* the affected side.

The cases all recovered, with rapid return of the heart to its normal position.

Pasteur compares these cases with five of complete paralysis of the diaphragm occurring in diphtheria, and in which the lower lobes, particularly the right, were found, *post-mortem*, to be totally emptied of air. He thinks that, in the present series, from temporary reflex inhibition of muscular action, the distending force acting on the lung becomes less than that of the elastic and muscular agencies tending to cause its contraction, and so these latter, so to speak, "take charge," with the result that the lung empties itself.

With regard to the displacement of the heart toward the affected side, the writer is not prepared to offer a conclusive statement, and suggests that further study is required.

He also draws attention to the fact that the above description does not apply to septic cases, where the conditions are much more involved.

—GEO. A. ALLAN.

SURGERY.

The Treatment of Post-Operative Cystitis. By Schläfli (*Zeitschrift f. gynäkologische Urologie*, February, 1910).—The treatment of cystitis, which has been studied for many years by many observers, has advanced but little. Some still hold to the method of internal medication, hoping to cure the inflammation of the bladder by means of antiseptics absorbed from the gastro-intestinal canal and excreted by the kidneys. Others have more faith in the direct local treatment.

Schläfli reviews, in the first place, the method of internal administration of drugs. He holds that the various preparations of salicylic acid, viz., aspirin, benzosalin, novoaspirin, and diplosal are more effective, and less harmful than the formic acid preparations, urotropin, helmitol, &c., and less dangerous than salol. These drugs vary slightly in their action—*aspirin* is probably the most effective, especially in subacute cases with headache, &c. Unfortunately, it is apt to cause gastritis, and is borne very badly by some people.

Diplosal is almost as quickly absorbed, is fairly powerful in its action, especially in acute cystitis, and has none of the above-mentioned drawbacks.

Schläfli has found that the administration of one of these drugs has in most cases been sufficient, but he admits that in some persistent subacute or chronic cases local treatment has been necessary.

The local treatment consists, in the first place, of removal by thorough lavage of the infected urine (especially necessary if there is residual urine) and, secondly, by attacking with antiseptics the germs in the vesical mucous membrane, being careful not to damage the tissues. During the acute painful stage he found that very weak carbolic acid solutions had a very beneficial effect, followed later on by a solution of silver nitrate, beginning at 1 per cent and increasing in strength to 10 per cent. In some cases the bladder was washed out with boracic acid solution, and a few cubic centimetres of the strong solution of silver nitrate then injected and retained in the bladder.

The colloidal preparations of silver, *e.g.*, kollargol, protargol, &c., have this advantage that even when used in strong solutions they cause less pain than the original silver nitrate solution. Protargol can, in fact, be used as strong as from 10 to 25 per cent.

As regards other antiseptics—boracic acid is so weak in its antiseptic properties as to be little better than saline solution; salicylic acid, although very effective, has this drawback that it is apt to cause severe tenesmus; corrosive sublimate can only be used in very weak solutions, 1 in 10,000, and has the same drawback as salicylic acid; and, lastly, the new French preparation of iodine, viz., aniodol, which can be used in a fairly concentrated and powerful solution with no ill effects.

The author emphasises the following points:—

1. The lavage is the all important part of the local treatment, and must be thorough.

2. During the lavage, which must be done slowly, the bladder ought not to be unduly distended.

3. The fluid used for lavage ought to be between 18° and 20° C., and may vary from saline solution to weak carbolic or strong boracic solution.

4. After the lavage is completed a fairly strong antiseptic which does not cause pain, *e.g.*, protargol, aniodol ought to be introduced into and left in the bladder.—ROBERT B. CARSLAW.

The Treatment of Ectopia Vesicæ. By M. Makkas (*Zentralblatt f. Chirurgie*, August, 1910).—Makkas expresses the opinion that the method used by Maydl in implantation of the ureters into the sigmoid flexure is a very great improvement on the earlier and more complicated operations. In most

cases there is no trouble with incontinence, but at the same time, owing to the great risk of ascending infection from the bowel *via* the ureters to the kidney, the mortality is undoubtedly high. In order to obviate this risk various modifications of Maydl's operations have been practised by Berglund, Borelius, Müller, and Berg.

An operation, by which the cæcum is employed as the new bladder and the vermiform appendix as an artificial urethra, was performed in May, 1910, by Makkus, on a girl, æt. 12, suffering from ectopia vesicæ with atresia of the vagina.

The details of the operation, which was performed in two stages with an interval of six weeks, were as follows:—

First stage.—The abdomen was opened by a vertical incision through the right rectus muscle; the ileum and transverse colon were united by a lateral anastomosis; the appendix, which was 7 cm. long, was brought out through a buttonhole opening below the abdominal incision, its tip cut off, and its mucous membrane stitched to the skin. The cæcum, from the tenth day onwards, was washed out by means of a catheter passed along the lumen of the appendix. Its capacity was about 100 c.c.

Second stage.—The extroverted bladder was dissected from the surrounding tissues and, with the exception of a small flap containing the ureteral orifices, removed. This flap was then implanted into an opening made in the posterior and lower part of the new bladder formed by the cæcum. A catheter was left in the appendix, and for the first eight days the urine was allowed to pass freely. After that time the catheter was allowed to empty the new bladder only every two or three hours.

Four weeks after the operation the patient was in good health; the capacity of the bladder had increased to 325 c.cm. The catheter was left in constantly, but the urine was allowed to flow only every three or four hours during the day and not at all during the night. There was no incontinence even when the catheter was removed through the night, but urine could not be passed without the use of the catheter, owing probably to some valvular obstruction in the appendix. The urine, the daily output of which amounted to over 1,000 c.c., was free from albumen, but was clouded by mucus.

The author, while admitting that the interval since the date of the operation is still too brief to permit any definite conclusions to be drawn, thinks that by his operation the risk of ascending infection is obviated, and at the same time a satisfactory substitute for the bladder obtained.—ROBERT B. CARSLAW.

The Technique of the Operation for Carcinoma of the Penis. By B. N. Chozoff (*Zeitschrift f. Urologie*, September, 1910).—There have been, in all, only some 33 cases reported in which the whole of the external genital organs have been removed for the cure of carcinoma of the penis. This operation, called by Chalot, one of its originators, “*emasculatio totalis*,” has been practised in France, Spain, Italy, Great Britain, but no records can be found of a case in Germany.

Chalot's method is as follows:—Two incisions are made in the line of the right and left ligaments of Poupert in the region of external inguinal rings. The spermatic cords are isolated, ligatured, and divided. These two incisions are prolonged downwards to the perineum, on either side of the scrotum, and meet about 3 cm. in front of the anus. A transverse incision also joins them just above the symphysis pubis.

The suspensory ligament of the penis having been divided close to the bone, the penis is drawn forward and divided as far back as possible. The corpora cavernosa are then separated from the remaining portion of the urethra and are divided close to their origin from the bone. After the removal in this way of the penis and scrotum the proximal urethral orifice is stitched to the skin at the posterior end of the perineal wound. The two incisions in the groin are then continued outwards and the lymphatic glands cleared out.

Opinions vary as to the advisability of performing this very radical operation on cases in which the carcinoma is limited to the glans penis or to

the penis; Dépage and Ravasina hold that the radical operation ought to be done in every case, whereas Chalot and Morisani only employ it where the carcinoma involves either the whole penis or the penis and part of the scrotum.

The author of this paper, having thus reviewed the work done on this subject, asks and proceeds to answer the question—Ought this operation, “emasculatio totalis,” ever be performed? He points out that in operating for carcinoma in any region the lines of removal must be in healthy tissues, and that any organs (no matter how useful they might be in their own individual function) which may be infected must be removed if this can be done without destroying life. But in carcinoma of the penis, even where the scrotal skin is involved, the disease has no tendency to spread to the testicle. The blood- and lymph-vessels of the penis and scrotal skin have no connection with those of the testicle or tunica vaginalis. Thus, unless the tumour involving the scrotum is actually adherent to the testicle, or unless the involvement of the scrotum is so extensive as to make it impossible to find healthy skin to cover the testicles—these organs should not be removed.

He then gives in detail the steps of his operation which corresponds to Chalot's *emasculatio totalis*, with the exception of the non-removal of the testicles. With the patient in the lithotomy position the bulbous urethra is exposed and divided, the proximal end being stitched to the perineum. A catheter is stitched in. The patient having been placed in the horizontal position, incisions are made from about three fingerbreadths inside the anterior superior iliac spines to the root of the penis. The lymphatic glands having been thoroughly dissected out from both inguinal and femoral regions, the skin incision is carried round the root of the penis. The suspensory ligament of the penis is divided, the penis is then pulled forward and divided. The corpora cavernosa are divided close to the bone. The bleeding is sometimes troublesome, but can always be controlled by having forceps on the bleeding points or by packing.

Cholzoff has performed this operation four times, with excellent results, except in one case in which there was a recurrence in the inguinal glands within the year.—ROBERT B. CARSLAW.

The Diagnosis and Treatment of Callous Ulcer of the Stomach. By Küttner (*Zentralblatt f. Chirurgie*, July, 1910).—At the Thirty-ninth Congress of the Deutschen Gesellschaft für Chirurgie, Küttner read a paper giving his opinion on the operative treatment of callous gastric ulcer. He referred to the decision of the Thirty-fifth Congress in favour of gastro-enterostomy, but gave his experience which led him to reject this operation and to replace it by excision. In support of his opinion he affirms:—

1. That in most cases it is impossible to say by weighing the clinical history, by examination of the ulcer through the laparotomy wound, or even by a macroscopical examination of the specimen whether what we have to deal with is a simple callous ulcer or an early carcinoma.

2. The mortality after gastro-enterostomy is really no less than after resection, while undoubtedly the after-results of resection are much better.

In investigating the first point, viz., the impossibility of differentiating a simple callous ulcer from a carcinoma, Küttner made use of thirty cases of resection which clinically were apparently callous ulcer, but which were submitted for histological examination to two skilled pathologists.

As regards the clinical history, in eight of these cases there was a typical history of benign gastric ulcer, in some cases extending as far back as twenty years, but the histological examination revealed carcinoma. On the other hand, in six cases, all of which were of a cancerous age, in which the symptoms had developed within six months and were very severe and suggestive of carcinoma, the ulcers were found to be all simple. He also comes to the conclusion that no positive reliance can be placed on the results of the examination of free hydrochloric acid (in four cases of simple ulcer this was negative, and in eight cases of carcinoma, positive), or of lactic acid (in eight

cases of carcinoma this was negative, and in three cases of simple ulcer, positive).

The presence or absence of blood in the gastric contents or in the motions afforded no definite indication of the exact location of the tumour or of its histological character.

As regards the help given to the surgeon by the performance of laparotomy in his decision—in some cases there is no doubt, from the appearance of the tumour, that it is a carcinoma, but in very many, especially in those which are recent and therefore suitable for operation, it is impossible to distinguish, by external signs, callous ulcer from carcinoma. In both cases there is a "tumour"; if it is large, hard, and free from adhesions, it is probably a carcinoma; but if it is a smaller more or less indurated mass, associated with extensive fine adhesions on the stomach wall and in the omentum, it is more likely to be a simple ulcer. In some of his cases, however, no help was got from these considerations, as several carcinomata were to all appearance simple small ulcers, and several large hard tumours proved afterwards to be simple in character.

The presence of enlarged lymphatic glands, also, is of little diagnostic value, as the neighbouring glands may be enlarged and hard in a case of gastric ulcer.

Coming to the microscopical examination, Küttner found that in 43·3 per cent of cases, in which before or during the operation the disease had been diagnosed as simple callous ulcer, the growth was found after removal to be distinctly carcinomatous. Each of his specimens showed either a distinct ulcer or a distinct carcinoma; not a single case of transitional growth was found.

As regards the relative risks of the two operations, gastro-enterostomy and resection, Küttner's own statistics from thirty cases show a mortality-rate of 13·3 per cent. In his last thirteen cases of resection for callous ulcer he has, however, not lost a single case. From this he deduces that although resection for carcinoma has a higher death-rate than resection for callous ulcer, yet the latter is as safe an operation as gastro-enterostomy. Incidentally he mentions that the same does not apply to duodenal ulcer, where the death-rate after resection is much higher. He has lost two cases from pulmonary complications after this operation.

As regards the late results of these two operations, he is strongly of opinion that all cases of callous ulcer ought to be treated by resection. In support of this he gives the following statistics :—

Out of nineteen cases of resection there were seven in which the original diagnosis of callous ulcer was changed by the pathologist into that of carcinoma. Of these seven patients, two have since died of recurrence, one is at present suffering from a recurrence, but the remaining four are still alive (some of them as long as fifteen years after the operation). These four cases would, of course, have been definitely lost had a gastro-enterostomy alone been performed. Of the twelve cases of resection (in which the original diagnosis of callous ulcer was borne out by the pathological examination), one patient died a year after operation from a perforative peritonitis (due either to a peptic jejunal ulcer, or to the perforation of a gastric ulcer overlooked at the time of operation); four others, although in good health, have occasional attacks of slight gastric pain; the remaining seven are perfectly well (some of them as long as nine years after the operation).

On the other hand, of twelve cases in which a gastro-enterostomy was performed for callous ulcer (this diagnosis not being histologically proved) five died later on from carcinoma. This percentage (41 per cent) agrees in a remarkable way with the proportion of 43·3 per cent, already mentioned, of cancers in gastric growths diagnosed and treated as simple ulcers. Only two of these patients, on whom gastro-enterostomy was performed, have had effectual and permanent relief from their former symptoms.

—ROBERT B. CARSLAW.

Very Rapid Intestinal Resection with a Technique combining Murphy Button, Hartley and Lilienthal Methods. By William L. Wallace, M.D. (*American Journal of Surgery*, February, 1911).—This combination of methods is suitable for any case demanding resection of the intestine, and is especially useful in cases where enterotomy, with its unsatisfactory results, would be the only alternative. The author has used it six times with six successes.

The technique is as follows:—In the first place the damaged gut is resected between clamps. Half of a Murphy button is then dropped into each of the open ends of the gut. To do this one of the clamped ends is held up and three artery forceps are fixed to the cut circumference; the intestinal contents are milked back between the fingers, the clamp is released, half of the button is dropped in, and the clamp at once reapplied. A Murphy button with large bore should be employed of a size which is "small enough not to crowd." The ends of the bowel are then tied off by a fine silk ligature. Any surplus is cut away, and the mucous surfaces are touched with pure carbolic acid. The gut over the end of the button cylinder is next incised and the cylinder pushed through. The two halves of the button are now pushed snugly together, making the anastomosis complete. The rent in the mesentery is sutured, and, finally, the abdomen is closed, leaving a drain to the peritoneum.—ROY F. YOUNG.

GYNÆCOLOGY AND OBSTETRICS.

Uterine Pregnancies occurring after Extra-uterine Pregnancies. By E. Essen-Møller, Lund (*L'Obstétrique*, March, 1911).—The author thinks that comparatively little attention has been paid to the study of these cases. There has been much compilation of statistics of the occurrence of intra- and extra-uterine pregnancies simultaneously, and of the occurrence of a second tubal pregnancy in the same patient. The present paper is based on a series of 56 extra-uterine pregnancies treated by the author in his clinique at Lund, in Sweden. All the cases were treated by operation, and he excludes 17 cases where, for various reasons (7 women were operated on this year), pregnancy was impossible. Of the rest, 46 per cent became pregnant—that is, 18 women became pregnant twenty-eight times, including two tubal pregnancies. One of the tubal pregnancies was preceded by a living child, and the other took place in a tube which had been freed from adhesions at the original operation. He does not draw any conclusion from his figures, but draws attention to the statement of fact that, with two exceptions, the women who were drained after operation did not become pregnant, and that the women not drained did so. A third point is discussed, namely, the comparative prospects of future pregnancy in cases of tubal gestation treated with and without operation. An obvious difficulty is the impossibility of being always sure of the diagnosis without operation. Prochownick has published such a comparison, giving twenty conceptions after 40 cases of non-treated tubal pregnancy, and twenty-one after 39 operations. As regards the occurrence after operation, two other series bear out his figures in a surprising way. Prochownick has 43·8 per cent, Engström 46·5 per cent, and his own 46 per cent. Funck-Brentano published observations showing that complications were liable to occur in pregnancies supervening on non-operated extra-uterine gestation, but his experience is somewhat discounted by some of his cases dating back to pre-antiseptic days. Pregnancy seems to follow in pretty much the same ratio, namely, 46 per cent without operation. Essen-Møller concludes that he will always operate in his cases of extra-uterine pregnancy.—E. H. L. OLIPHANT.

Ocular Troubles During Pregnancy. By Weil and Wilhelm (*L'Obstétrique*, March, 1911).—Widal and Javal have shown that renal insufficiency is marked by two distinct conditions—in dropsical cases there is retention of chlorides; in the so-called dry cases there is retention of the urea. These two conditions are sometimes associated in various degrees, but occasionally quite separate. Widal and his pupils have studied the ocular conditions associated with each form, and concluded that the retention of chlorides was associated with the sudden onset of amaurosis, passing off with the elimination of the chlorides, and marked during its occurrence by little in the way of changes in the fundus, and these leave no trace. On the contrary, the retention of urea is characterised by the presence of typical albuminuric retinitis, leading to blindness and often to a fatal termination. Weil and Wilhelm relate a case of albuminuric retinitis occurring in a primipara in the seventh month of pregnancy in a woman who had previously suffered from nephritis. There was a large quantity of urea in the urine. The patient's condition was so alarming that labour was induced, and she made a good recovery, with complete restoration of her vision, which she had quite lost, and with entire absence of excessive urea. Two other cases are recorded of amaurosis during pregnancy associated with excessive chlorides, but without changes in the fundus. Both women were eclamptic, and made quick recoveries after spontaneous premature labours. The authors draw attention to the distinction of the two classes as regards treatment, and show the uselessness of withholding chlorides in patients who are eclamptic from urea poisoning without excess of chlorides.—E. H. L. O.

On the Replacing a Retroflexed Uterus by means of a Pessary. By Goldberg, Warsaw (*Zentralbl. f. Gynäk.*, No. 51, 1910), and Hirsch, Berlin (*Zentralbl. f. Gynäk.*, No. 9, 1911).—Goldberg remarks on the difficulties often found in the bimanual reposition of a retroflexed uterus, such as those arising from thickness or resistance of the abdominal walls, nervousness of the patient. Such difficulties often lead the practitioner to use narcosis and to replace the uterus by means of a sound. In such conditions, and in the absence of inflammatory or other indications, he introduces a well-curved Hodge pessary, guiding the broad upper bar well into the posterior fornix. He then passes two fingers into the vagina with the palmar surface forwards, in front of the lower bar of the pessary, pressing this back gradually but firmly with the dorsal surface of his fingers till the tips reach the cervix. At the same time the other hand can be used as in the bimanual method to bring forward the fundus if necessary. It is essential to have the bladder empty. He gives a series of cases in illustration. The pessary must, of course, be of suitable size, and if the first tried is too big, or too small, a more suitable one is to be chosen.

Hirsch bears out the statement of Goldberg, with some slight modifications of the technique. He chooses a pessary with a straight upper bar, slightly rounded at the corners, and the general curve of the pessary should never be sharper than a right angle, or the upper bar may fail to act as a lever, and merely push itself into the angle between cervix and fundus in a case of acute flexion. Also, if the fundus be lying very low it is well to push it partially up *per rectum* before introducing the pessary. Instead of pushing two fingers into the vagina, Hirsch catches the cervix with a tenaculum to draw down the cervix, and behind this he passes the pessary. The traction with the tenaculum is specially useful in cases where the fundus is jammed into the hollow of the sacrum. A single finger is sufficient to draw the lower bar of the pessary back towards the perineum, and the finger passed behind the lower bar can then be passed up to the cervix to push it upwards and backwards, while the other hand on the abdomen brings forward the fundus. Both authors agree that the procedure is comparatively painless.—E. H. L. O.

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- Cesarean Section in Great Britain and Ireland, with Tables, by Amand Routh, M.D. Lond., F.R.C.P. Lond. London: Sherratt & Hughes. 1911. (5s. net.)
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GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR
THE FOUR WEEKS ENDED 22ND APRIL, 1911.

	WEEK ENDING			
	April 1.	April 8.	April 15.	April 22.
Mean temperature, . . .	40·6°	40·1°	46·8°	47·4°
Mean range of temperature between highest and lowest,	9·8°	12·2°	15·5°	11·8
Number of days on which rain fell,	2	0	1	6
Amount of rainfall, . . ins.	0·08	0·00	0·21	0·79
Deaths registered, . . .	275	290	305	278
Death-rates,	16·0	16·9	17·7	16·2
Zymotic death-rates, . . .	1·3	2·0	2·4	2·0
Pulmonary death-rates, . .	4·8	6·1	4·9	5·3
DEATHS—				
Under 1 year,	53	61	49	47
60 years and upwards, . .	62	68	78	71
DEATHS FROM—				
Small-pox, . . . . .	...	...	...	...
Measles, . . . . .	...	3	9	3
Scarlet fever,	1	2	1	1
Diphtheria,	3	4	2	3
Whooping-cough,	16	23	27	28
{ Fever, . . . . .	...	1	1	...
{ Cerebro-spinal fever, . .	2	...	...	1
Diarrhœa,	4	4	7	6
Croup and laryngitis, . .	...	...	...	...
Bronchitis, pneumonia, and pleurisy,	55	85	62	75
CASES REPORTED—				
Small-pox, . . . . .	...	...	...	...
Cerebro-spinal meningitis, .	...	...	2	1
Diphtheria and membranous croup,	22	33	28	27
Erysipelas,	22	14	17	15
Scarlet fever,	42	51	49	40
Typhus fever, . . . . .	...	...	...	...
Enteric fever, . . . . .	...	5	2	6
Phthisis,	57	43	35	44
Puerperal fever,	5	4	4	4
Measles,*	128	128	141	129

* Measles not notifiable.

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ORIGINAL ARTICLES.

THE X-RAY TREATMENT OF RINGWORM OF
THE SCALP.

By J. GIBSON GRAHAM, M.A., M.D.,
In Charge of Electrical Department, Elder Hospital, Govan.

IN many skin diseases the *x*-rays have been found useful, but in none has their value been more marked than in ringworm of the scalp, for which, it may now be claimed, they are the remedy *par excellence*. Yet the recognition and adoption of the Roentgen tube in Scotland as a means of treating this disease lingers behind the Continent and even London. Be the explanation what it may, there is no doubt that many regard the Roentgen tube with distrust, amounting even to fear, as an agent whose action is difficult of control, and which may in spite of all precautions do irreparable injury. There is, or rather there was, some truth in this. Formerly the Roentgen tube was employed for therapeutic purposes without protection to the patient or operator, at variable distances and for variable times, and without means for estimating the dose given. That such methods gave unsatisfactory results, and that disaster both to patient and operator sometimes followed, is easily understood.

Now all this is changed, the only variable factor is the tube; the distance of the part rayed from the target of the tube is constant; the dose is measured by a Sabouraud's pastille; patient and operator are protected by suitable contrivances, and the rays are played only upon the part desired.

Effect of the x-rays on skin and hairs.—The x-rays act most energetically upon epithelial cells, causing them to undergo various changes ending in complete degeneration and death. They produce pigmentation, erythema, atrophy, dermatitis, and ulceration superficial and deep. But their earliest effect, and that which alone concerns us in the treatment of ringworm, is shedding of the hairs.

Latent periods of the x-rays.—During the latent period, which varies inversely as the dose of x-rays received, there is no visible effect. Kienböck using this fact has divided the reactions produced by the rays into four degrees.

First degree.—Latent period twenty-one days; result—temporary shedding of hairs.¹

Second degree.—Latent period fourteen days; result—temporary shedding of hairs, with some swelling and redness of skin.²

Third degree.—Latent period ten days; result—those of first and second degree *plus* dermatitis, erosions, and exudation. Subsidence of reactions in from three to four weeks.

Fourth degree.—Latent period seven days; result—reactions of first, second, and third degrees *plus* ulceration and necrosis; slow healing.

For the treatment of ringworm of the scalp, however, all we wish to procure is a reaction of the second degree, in which complete baldness of the patch rayed should be produced in a week from the commencement of the shedding of the hairs.

Armamentarium.—It is necessary to treat this subject with some detail, as the success of the treatment depends upon the efficiency of the apparatus employed.

The coil.—Of recent years coils have improved very much, and a modern coil with a spark of from 12 to 16 inches should give good results. But coils with the same nominal spark vary in efficiency. The length of the spark alone is

¹ Shedding of hairs incomplete in scalp.

² Not observed in scalp.

no index of the amount of the current passing. A useful method of testing the coil is to form an air gap of 20 cm. between the naked ends of the wires coming from the coil. The milliammeter is in the circuit, and will indicate the amount of current passing. A coil suitable for therapeutic work should send through this air gap 1 ma. of current, with 4 to 6 amperes passing through the primary.

Milliammeter.—This instrument is also a necessity, and should be of the D'Arsonval type. It measures the current passing through the tube, which for therapeutic purposes should not exceed 1 ma.

Radiometer.—By this instrument the penetrating power of the rays are measured. The one I have been in the habit of using is Dean's. It consists of a standard disc of metal (silver), by the side of which a series of similar discs, varying in thickness, and numbered from 2 to 10, can be revolved by a screw for comparison with the standard. When the fluorescence caused by the rays penetrating the standard and revolving disc is the same as shown on a strip of barium platino-cyanide placed behind them, a number corresponding to the disc is then read, and indicates the penetrating power of the rays: the higher the number the greater the penetration. A penetration of 6 to 7 on this scale is the most suitable for therapeutic work.

Rays of low penetrating power, 2 to 4 on the scale, are chiefly absorbed by the glass of the tube and superficial layers of the skin, and no matter what the current may be flowing through the tube, the time taken to discolour a Sabouraud's pastille will be very long. It has been shown by Walter that Sabouraud's pastilles will assume B, but with a rapidity increasing directly as the penetrating power of the rays increases, the current through the tube and the distance of the pastille being kept constant.

Sabouraud's pastilles.—Another essential in *x*-ray therapeutic work is these pastilles. Composed of barium platino-cyanide in a neutral basis, they change colour, on exposure to the *x*-rays, from their original colour of citron yellow to a reddish-brown. This tint is reached gradually, and may be got after an exposure of from five to twenty minutes, varying with the output and quality of the rays. This is called B tint, and is shown on a coloured square in each book of Sabouraud's pastilles. B tint is said to indicate that a dose of the rays has been given sufficient to cause depilation of

the hairs of the part without dermatitis or other untoward effect.

Experience soon enables the operator to dispense with any

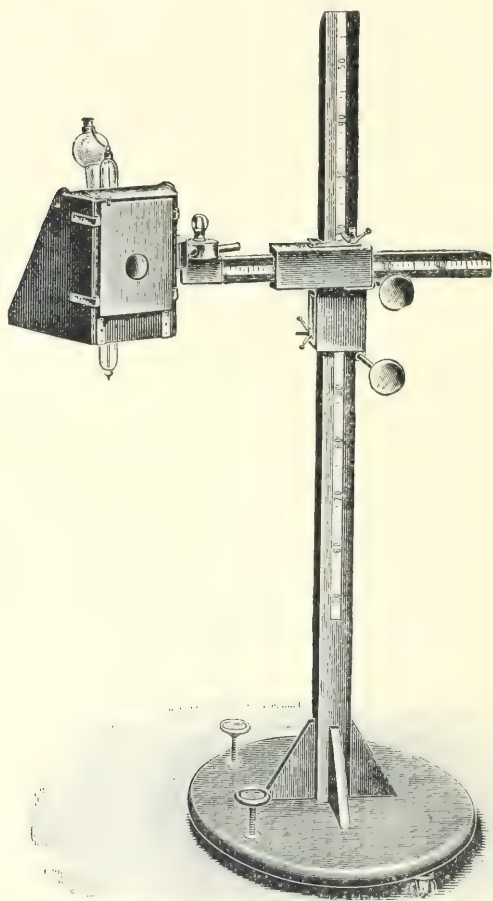


FIG. 1.

Schall's therapeutic stand and shield.

reference to standard B in the book of pastilles, and by arranging to have the pastille only partially exposed to the rays, which can be done by covering the pastille to half of

its extent by a piece of metal, the difference between the original tint of the pastille and that produced by the rays is readily seen.

The pastille must be placed in a suitable holder, which should have a metal bed on which the pastille rests, and be covered with a piece of black paper to exclude daylight. Daylight or artificial white light decolourises the tint produced by the rays.

Therapeutic stands and shields (see Figs. 1 and 2).—Fig. 1 shows a Schall's therapeutic stand and shield. The arms bearing the shield can be raised or lowered and advanced or drawn back by two screws, while by a ball in socket

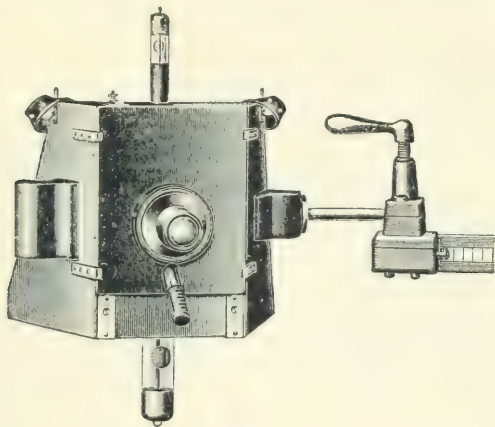


FIG. 2.

Speculum and the pastille holder in position.

arrangement, shown in Fig. 2, the shield can be readily adapted to any position. Fig. 2 shows speculum and the pastille holder in position. It is almost needless to say that the shield is lead-lined and the specula made of lead-glass to exclude the rays from striking the operator or any part of the patient not desired.

Specula.—Fig. 3 (p. 406) shows four lead-glass specula and pastille holder. Their diameters vary from 3 to 10 cm. As the distance between part rayed, pastille, and target of tube must be kept constant and the x -rays are divergent, it is obvious that there is a limit to the size of the specula which can be used. The x -rays at the periphery of the circle are

weaker than those striking the centre. Holz knecht found by experiment that a fairly uniform result can be got in a flat circular patch when the distance of the target of the tube is double the diameter of the circular patch. Thus with the target of the tube at a distance of 16 cm. from the centre of the patch (as in Schall's shield, see Fig. 1) the limit of the diameter of the largest speculum ought to be 8 cm. The largest of the specula in Schall's being 10 cm. is a little too large: but as it is chiefly used for raying the whole scalp, and in this case some overlapping must take place, this is rather an advantage than otherwise.

The diagram on p. 407 shows how this overlapping is accomplished, and that the edges receive a double dose of the

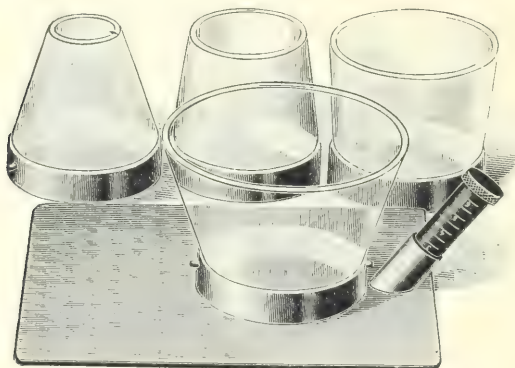


FIG. 3.

Four lead-glass specula and pastille holder.

peripheral rays, which with a large speculum are much weaker and no harm results.

Indeed, in my experience there is a considerable margin of safety between B tint and a harmful dermatitis. Failure results more frequently from inefficient than from over raying.

Interrupters.—Be the coil as good as it may be, good work cannot be got out of it by a bad interrupter. The interrupter breaks the current passing through the primary circuit of the coil. Its efficiency depends on—(1) a good contact; (2) an instantaneous break: and (3) a suitable frequency.

When the frequency of the interruptions rises to such a height that the iron core of the coil (primary) has not

time to get sufficiently charged before the break occurs, then the output of electric energy from the secondary windings will fall short. There is thus a frequency of interruptions, for a given interrupter, which is the optimum for each coil. I have got good results from a mercury gas interrupter supplied to me by D. Selkirk & Co., which has enabled me to get B tint in Sabouraud's pastille with my coil in from five to ten minutes.

The x or Roentgen ray tube.—This is an instrument which is now pretty well known, and needs no detailed description. The modern tubes are provided with a mechanism for the regulation of the vacuum. The tendency is for all tubes to

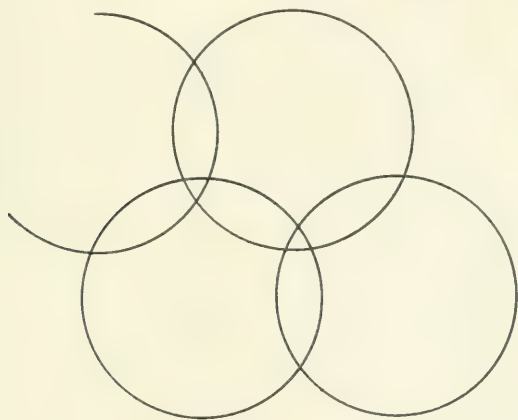


Diagram illustrating overlapping of circles in raying.

grow harder from use. By passing the current through the regulator, which contains generally a disc of mica, a small quantity of air is liberated and the vacuum of the tube lowered.

In therapeutic work a very soft tube is of no use, as already mentioned. A tube which gives rays of a penetration of from 6 to 7 is best suited for effecting depilation of the hairs. A new tube should be brought into working order with the coil with great care. Any attempt to throw a large current through it at the beginning is sure to damage it for future use. My practice is to use certain tubes for therapeutic work alone, and begin to work them with a current of 0.5 ma.

and slow interruptions, and gradually they will get to work well with 1 ma. and much quicker interruptions, and if not pushed beyond this point will work for months in daily use.

Cubicles.—In addition to the apparatus already detailed, some workers with the x -rays consider additional protection is required, and cubicles have been constructed with that object in view. These are lead-lined cabinets in which the patient is placed when exposed to the rays. The operator places the patient in the cubicle, adjusts shield and speculum to the part, and retires to the switchboard and switches on the current through the tube. An occasional glance through a lead-glass window is all the attention which he can give the patient, at least if he is to receive the full benefit which the lead-lined construction will give him.

Where an adult is concerned this procedure may work very well, but in the case of children, and it is these, often very young, we have to deal with in treating ringworm of the scalp, the cubicle method will not work. For to keep a young child's head in close contact with a speculum needs constant attention on the part of the nurse, parent, or operator, which often entails holding the child in position, and hence the presence of the nurse, operator, or parent within the cubicle itself.

Ringworm of the scalp.—The x -ray treatment is suitable for all kinds of ringworm. The researches of Sabouraud and others have revealed a host of species of ringworm fungus, which, however, for practical purposes may be divided into two main groups:—large spored, megasporon: and small spored, microsporon.

The large spored comprises two distinct species:—(1) that due to the trichophyton endothrix, of human origin: and (2) that due to the trichophyton ectothrix, of animal origin; the latter is often associated with kerion.

The small spored ringworm is caused by the microsporon audonini. It is common in Scotland, and presents clinical features somewhat different from those which characterise the two former.

The diagnosis having been made, our object is to remove the hairs completely from the affected area, and to prevent re-infection of adjacent parts.

Method.—The hair is cut short, so that the full extent of the disease may be rendered visible. It will then be seen how many areas have to be rayed and what size of speculum

should be used. If the whole scalp require raying, then the largest sized speculum should be used, and overlapping of the circles arranged as described under the heading *armamentarium*. The current having been switched on, the condition of the tube is ascertained, the equivalent spark gap should not be less than 4 inches, and as ascertained by the radiometer the penetration of the ray should be at least 6 on the scale (Wehnelt's or Dean's), while the milliammeter should not register more than 1 ma. and not less than 0.5 ma.

The patient may be seated on a chair with a movable head rest or lying on a couch, as may be most convenient. The speculum fitted to the shield is now accurately adjusted to the patch, and a nurse or parent of the child told off to keep the head in position. I mark round the rim of the speculum a circle with a blue "copying ink" pencil, which is a guide to the party keeping the head in position and also shows the operator what part he has rayed.

A Sabouraud's pastille is placed in its holder and fixed in proper position, and the current is kept running until the pastille shows a pronounced B tint. At intervals of five, then three, then two minutes I examine the pastille if a current of from 0.5 to 1 ma. is passing through the tube, and with 1 ma. generally get B tint in from five to seven minutes. After a successful raying the hairs begin to shed on the fourteenth day, and complete baldness of the patch rayed should result in a week later. This process may be assisted by the parent pulling out the loosened hairs with a pair of epilating forceps.

Causes of failure.—1. A decided B tint has not been reached in the usual time, and after prolonging the sitting somewhat longer, say, up to twenty minutes, the temptation to see the shade darker than it really is, is sometimes too much and the sitting terminates. In a fortnight the hairs are found to be about as firmly rooted as on the day of exposure. Here the fault is generally to be found in a too soft tube. The milliammeter may have been registering from 0.5 to 1 ma., but the penetration of the rays has probably been too feeble, or the fault may not have been in the penetrating power of the rays but in the current passing through the tube, say, 0.1 or 0.2 ma.

2. A decided B tint is got, and yet on the fourteenth day a failure is recorded. Here the cause has been imperfect apposition of the part to the speculum. When failure occurs, re-exposure of the part can be undertaken in a week

later. However, in re-exposing at this interval of time it is safer to aim at a rather fainter tint than B.

I once had this experience. On re-exposing a patch on the twenty-first day, I gave a dose up to full B tint, and the hairs shed in a bunch on the seventh day, much to the mother's alarm. But they grew again nicely, although regrowth was delayed beyond the usual time.

Treatment after raying.—I order the child's head to be washed every night with carbolic soap and hot water, or in dispensary patients with soft soap and water, dried well, and a 10 to 20 per cent of salicylic acid in methylated spirit lotion swabbed over the patches. This leaves a fine powder of salicylic acid on the patches, and in my experience acts well. On the fourteenth day the child is brought up for inspection, and the state of the hairs as to loosening is tested. They should then be quite easily pulled out with forceps. On the twenty-first day another inspection takes place, and the patch or patches rayed ought to be quite bald, especially if the parent has intelligently assisted the process with forceps.

The results of the treatment thus carried out are that a regrowth of healthy hair takes place at the end of two months, and the new growth is complete at the end of three months from the date of raying. Thus this disease, which under the old methods of treatment by ointments, lotions, and manual epilation, often ran an uncertain and unsatisfactory course for months and even years, can by the *x*-rays be brought to a successful issue in three months.

Personal experience.—I have treated within the past few years in the Elder Hospital and private 50 cases of ringworm of the scalp. Beginning at a time when the apparatus and the method had not reached their present grade of efficiency I had a large percentage of failures; but working under the system I have detailed in the preceding pages I find failures few and due to causes which are unavoidable in the case of dispensary patients.

Sometimes a re-ricing may be necessary, and this may be carried out without fear with precaution already indicated; sometimes an infection occurs in another part and is dealt with by the rays in the usual way. But if the treatment is thoroughly carried out it is thoroughly satisfactory, and I believe in the Continent has quite superseded all other methods.

Illustrative cases.—1. Shows the head of a boy who had disseminated small spored ringworm. The whole scalp was rayed through largest sized speculum in six applications; Sabouraud's pastille being brought to B tint on each occasion.

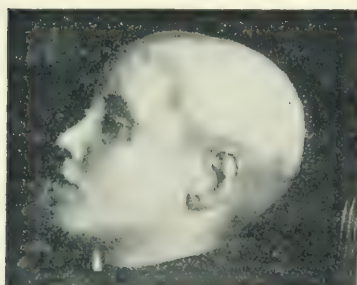


FIG. 4.

Showing the baldness produced by the rays.



FIG. 5.

Showing the final result.

In fourteen days the hair was loosening and falling out. The father of the boy assisted the process with forceps. The result is shown in the adjoining photographs. Fig. 4 shows the baldness produced by the rays; Fig. 5 the final result in three months afterwards. The opposite side of the boy's head is here shown, but the whole scalp was as bald on the one side as the other.



FIG. 6.

Showing the baldness.



FIG. 7.

Showing the final result.

2. Illustrates a partial depilation of the scalp and the result. This was also a case of small spored ringworm. The baldness occurred in a little over fourteen days, and the regrowth was complete, as shown in the second photograph, in three months.

THE USE OF PHYSICAL METHODS IN THE TREATMENT OF CHRONIC CONSTIPATION, WITH SPECIAL REFERENCE TO SINUSOIDAL CURRENTS.

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No apology is necessary for the suggestion of a comparatively novel means of treating constipation. The drug remedies for this ailment are legion, and one is safe in saying that about one half of the duty paid on patent pills and medicines comes out of the pockets of the constipated multitude. If any wholesale drug house be asked what class of pill is most asked for, they will at once reply, "*Aloes co., Cascara, et hoc omne genus.*"

It is not for one moment suggested that these should be entirely replaced by electrical methods, nor in a large and major number of cases is electrical treatment indicated. Moreover, in some of those cases for which it is both advisable and possible, it may not be feasible, in the first instance at anyrate, to forego the help obtainable from drugs and diet. The class of case to which sinusoidal treatment is specially adapted is the case of long-standing constipation in an otherwise healthy patient, who dislikes having to constantly take drugs; but more particularly is it adapted to the thin, atonic, neurasthenic patient who suffers from constipation, and who, moreover, worries much about it, and finds his neurasthenia is emphasised by the use of laxatives which alternately purge and fail to act altogether.

The causes of constipation are too numerous to mention in detail, but one may briefly run over some of the more common remediable causes in the average patient. We find electricity, broadly speaking, most useful in those cases where the intestine is atonic and the general innervation deficient. Apart from this, however, one finds that in very many cases, especially among women, far too little fluid is taken to keep the contents of the intestinal canal in a semi-fluid condition. Deficient biliary secretion, frequently resulting from sedentary habits, may lead to it, combined with the weakness of the abdominal muscles in the same persons. The common origin of constipation from careless neglect in youth and deficient lavatory accommodation at school is notorious. Women are

more prone to this affection than men, partly, doubtless, owing to the less amount of exercise which the average woman takes, and partly from the influence of the menstrual epoch and the occurrence of pregnancy.

The neurasthenic individual frequently falls a victim to constipation. He broods over the lamentable condition of his inner man, observes his motions with precision, and the neurasthenic condition is kept up by the absorption of toxic substances from the large intestine. The stools are minutely inspected daily, and said to contain "many strange and wondrous things," which the most careful inspection on the part of the physician fails to discover. The manner in which patients of this character become obsessed by their bowels and motions is truly astonishing. The writer had one neurasthenic patient recently, with very marked Glénard's disease and intractable constipation, and he complained so bitterly one day of the manner in which his motions were diminishing in size, and of the great difficulty he had in getting any whatever, that I said, chaffingly, "Well, I suppose you think you are going to close up altogether." He at once answered in the affirmative, quite seriously, and appeared to be in daily dread of this calamity!

What is sometimes a very troublesome type of constipation which one is apt to meet with, more particularly in hydro-pathic practice, is that caused by an atony of the large bowel, induced by the abuse of enemata or intestinal douches. Instead of regarding an enema, hot or cold, as a useful application of occasional use in special circumstances, there is a certain type of patient—with a perverted judgment, shall I say?—who regards the application of water to the bowel, however often, as much more healthful and rational than the taking of any drug—from podophyllin to aloes. One crank I remember of this description who used to speak proudly of the number of pints he got up his sigmoid flexure at night by means of a gravity douche-can. I lost sight of him, but I have little doubt he got his colon into a perfectly hopeless condition if he pursued this habit. A lady came to me in July last (case mentioned below), who had got herself into this condition, and the bowels were really parietic, and did not respond to any drug in the natural way. She had been using a Higginson syringe to give herself cold water enemata for many years, until at last the bowel lost all its normal response to a faecal mass, and the good lady found herself in a deplorable condition, from which, happily, one was able to rescue her in some measure by means of sinusoidal treatment.

Sinusoidal or polyphase currents.—In order to explain the nature of these currents as clearly as possible it will be well to deal, in the first place, with the production of a single-phase current. When a conductor is moved around a constantly varying magnetic field, E.M.F. is induced in that conductor, and if the circuit be completed a current will flow.

The best known application of this principle is the ordinary dynamo or electric generator. This consists elementally in a revolving armature carrying a conductor through the lines of force between the concave poles of an electro-magnet. The currents set up are collected by carbon "brushes," and carried away by these to act in the circuit or be stored in accumulators or storage batteries until required.

The rotation of a cylindrical armature between the poles of an electro-magnet causes a constant variation in the intensity of the magnetic field—an absolutely essential condition in the production of electrical potential in the conductor.

The armature consists of a ring of soft iron built up from a number of soft iron discs, insulated from each other in order to prevent the formation of what are called eddy currents, which would cause over-heating. Around the iron ring is wound a coil of wire, the rotation of which through the lines of force generates induction currents in the coil. These currents are *alternating*, the change in sign of the voltage from + to - in any particular portion of the coil taking place as that portion passes the middle line between the north and south poles of the magnet—on the line of commutation, as it is called.

By sinusoidal we mean that the intensity of the current at any moment is proportional to the *sine* of the angle between the plane of the coil and the line of commutation.

Between the poles of the concave electro-magnet the lines of force are straight, and cut the surface of the rotating armature at a constantly varying angle—a right angle when it is opposite the centre of the pole of the electro-magnet, and then the angle becomes progressively more acute as the armature revolves until it is moving parallel with them, when no E.M.F. is generated.

We will follow a phase starting from this point. With the rotation of the armature the conductor enters the lines of force of the opposite pole, and E.M.F. is induced. As it continues to cut them at a constantly varying angle, the E.M.F. increases to a maximum point, at which the conductor

is opposite the centre of the pole-piece, say S. When the conductor has completed half a revolution, and lies between the poles midway, the current has sunk to zero.

The armature now continuing its course enters the lines of force of the north pole, and fresh E.M.F. of the opposite sign is induced in it.

Taking the complete cycle, we find that at 90° the E.M.F. is at its maximum, at 180° it is at zero, but it at once reverses its direction and increases in the opposite sign, to reach zero again at 360° . This process is repeated to infinity.

Any point P on the circumference of the circle represents a conductor in the surface of the armature, the circle representing its path of rotation in the magnetic field.

The horizontal line through the circle represents the plane of the coil and zero. The E.M.F. generated in P at any phase of its revolution may be denoted by a perpendicular from this point.

The zero line to the right is divided into sections A, B, C, D, E, and F, representing successive periods of time by marking

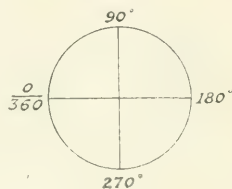


FIG. 1.

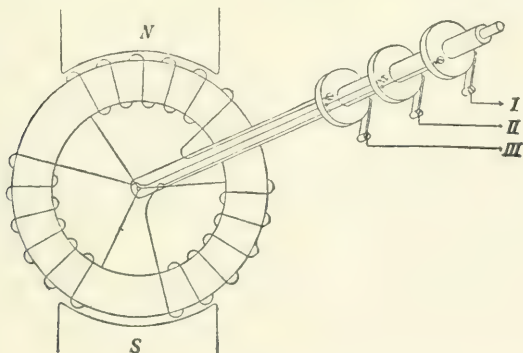


FIG. 2.

Diagram showing arrangement for producing three-phase currents.

a series of heights corresponding to the height at the commencement of any of them, and joining. The curve formed will represent the ebb and flow of the E.M.F., and is a true sine curve. The current is obviously an alternating one.

If there be four conductors at 90° apart, the current is a bi-phase one. If there be three conductors at 120° apart on the surface of the armature, then a three-phase current will be induced, for there are three sets of conductors moving in a magnetic field, and each reaches its maximum at 120° .

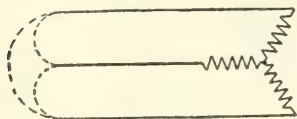


FIG. 3.

Each of the conductors will serve in rotation for the reverse current of the other two, so that at any moment $A + B + C = 0$. Such tri-phase currents are specially adapted to therapeutics, as they produce a rotatory magnetic field, and the tissues they act in are in what is known as an "electric whirlpool."

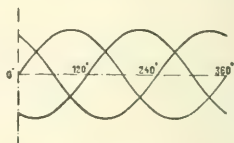


FIG. 4.

The tri-phase generator (Dean-Herschell type).—The form in which this apparatus is now put on the market is a very handsome one. The switchboard is of white marble (in accordance with the new Board of Trade regulations). As it

Line of commutator.

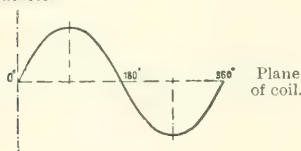


FIG. 5.

Plane of coil.

is mechanically advantageous, the secondaries are stationary, and the primaries are moved by means of a rack and pinion. The electrical result is, of course, the same. The motor stands by itself, being attached to the board by a plug. It consists of a field armature, with a

commutator having equidistant tappings connected, the slip rings in which brushes are held in contact with springs. The sinusoidal currents (monophase, bi-, or tri-phase) are carried to the primaries of the induction coils, arranged in parallel, by means of flexible cords. The speed at which the armature rotates is controlled partly by a rheostat and partly by a pressure-brake, which acts by virtue of the load borne by the generator.

The amount of resistance remaining constant, however, and the break being gradually applied with the motor running at full speed, a progressive fall is caused in the number of revolutions and the alternations without any change in the E.M.F. The electrodes are placed in intimate contact with the patient's skin or mucous membrane, and the currents are formed in the body.

The motor should never be suddenly stopped with the electrodes in contact with the patient, or he will receive a severe shock. This is due to back electromotive force developed in the armature. To prevent it the secondary coils should be worked back to the starting point, the ohmic rheostat worked back to weak, and the current switched off completely. The electrodes may then be safely removed.

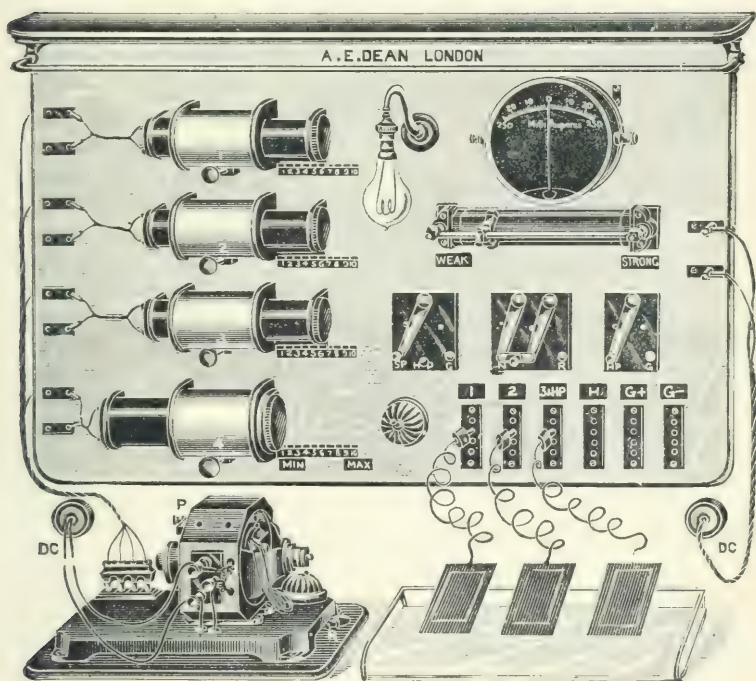


FIG. 6.

Hershell-Dean sinusoidal apparatus for direct current mains, with complete control of tension and period.

Electrodes.—For the majority of cases we use a tri-phase current, and three electrodes are then necessary. One large metal plate covered with flannel or wash leather is placed beneath the patient at the level of the lumbar region. A smaller plate is laid on the abdomen just below the umbilicus. For the rectal electrode I generally use an uncovered metal one, well vaselined, and find no difficulty with sinusoidal

treatment as regards any undesirable action on the mucous membrane. Dr. Herschell recommends the electrode to be covered in membrane and distended with water. Of course, where a galvanic current is used this is highly desirable.

In this as in all electrical applications, the plate electrodes should be of large size. At the same time, a roller electrode—say 3 inches wide—is advantageous for the front of the abdomen. In cases where there is marked gastric atony along with the constipation—a not unusual combination—instead of an interior electrode, Einhorn's intragastric electrode should be used with due precautions. I had a case sent me recently of obstinate constipation and supposed gastric dilatation, but examining the stomach by direct inflation I found the larger curvature right down on the pubic symphysis, and the smaller just above the umbilicus. In such a marked degree of gastropstosis as this, of course, even sinusoidal currents are of very little use.

Having got the electrodes all into position, and switched the current of supply on to the board, the slider of the rheostat is pushed to "*strong*" until the fly-wheel is running at full speed. Then by means of the ratchet-wheel move forward the secondaries until the patient is feeling the current pretty sharply. To cause strong muscular contractions of the abdomen, the E.M.F. must be kept up or increased while the rapidity of alternation and phase is reduced. This is arranged by turning the milled head of the break until the pressure of the brush against the rim is sufficient to reduce the revolutions of the wheel to the desired speed.

Auxiliary measures, &c.—The type of patient coming under treatment naturally varies a good deal, and the auxiliary measures employed, of course, vary with this and the strength and ability of the patient to carry them out. The day commences with a spray—preceded in some cases by ten minutes' abdominal massage. This latter is carefully applied from right to left, following the course of the colon.

If the stools have been abnormally pale it is supplemented by five minutes' vibration over the liver, which is always followed by good result and increased flow of bile. In place of these procedures sometimes there is substituted a shallow bath at body temperature, accompanied by cold abdominal douching. This is a remarkably tonic and effective measure. If there is any chance of the bowels acting before breakfast, and especially if there be piles, the patient gets out of this

bath and moves to a sitz bath in the immediate vicinity. On sitting over this he gets the ascending douch or spray to the anal region, commencing hot and going on to cold. This often has the effect of getting an action of the bowels when used in conjunction with the other procedures.

In the forenoon the patient is free for exercise out of doors, but at twelve he goes to the gymnasium and executes a series of exercises under my own or the masseur's direction.

The first are simple body movements, such as—

1. Lying flat on the back and then raising the body from the horizontal to the sitting posture, and slowly returning into the horizontal.

2. Bending the trunk forward from the vertical posture and keeping the knees stiff.

3. Bending sideways and rotating the trunk on the pelvis.

4. Flexing the thigh quickly and sharply on the abdomen.

5. Settling down—that is, supporting the weight of the body on the tiptoes while the thigh is flexed on the leg—the hands being supported on the hips.

These exercises are repeated from six to twelve times. They are light and not fatiguing, and so well suited to the feeble atonic type of patient.

In addition, or as a substitute in some cases, the use of some Zander apparatus is good. Among the varieties of these generally used is the rotating chair. The patient supports his arms against two wooden pins (padded) on the arms of the chair, extends the legs, and then swings the chair from side to side, so bringing into action the lateral abdominal muscles.

The crank is useful for exercising the rectus muscles, the weight being carefully adjusted to the strength of the patient.

The sinusoidal treatment is usually applied in the afternoon—in some cases daily, in others on alternate days.

The great difficulty is to persuade patients to persevere long enough. It is useless to expect that constipation of an obstinate character with a markedly atonic condition of the bowels, which has existed for many years, is to be cured in a few days. Seldom does a case get completely well under a month, and often a little more is desirable.

When one knows how much the bodily comfort and sense of *bien-être* depends on the bowels being active or obdurately passive, a month spent in enabling the patient to dispense with the constant use of uncertainly acting purgatives cannot be considered wasted.

As regards diet, the patient is ordered to take an adequate amount of fluid—a point which almost all women of strict sobriety seem to neglect. A dietetic regimen somewhat like the following is pursued:—

Breakfast.—Coffee with milk sweetened by the addition of a tablespoonful of *lævulose* (if desired), a thick slice of coarse brown bread, butter, honey or marmalade. Some grilled bacon or a slice of cold ham.

Lunch.—Plainly cooked fish—with or without potatoes, green vegetables, salad (with oil), brown bread and butter or “College” biscuits, stewed prunes or figs.

4 p.m.—A cup of weak tea and a plain biscuit.

Dinner (7:30 P.M.).—Clear soup, or Scotch broth occasionally, a fillet of fish, a cut from the joint with green vegetables, brown toast and butter, and a light soufflé pudding of some sort.

In some cases the use of soured milk is of the greatest benefit. This is usually ordered to be taken immediately before breakfast, instead of soup at lunch, and in the place of pudding at dinner. It is poured into a saucer, sprinkled with sugar and eaten with a biscuit.

It may now be instructive to detail a few of the cases which have come under my notice during the past two years.

One of the most striking cases which has come to me is the following:—

Dr. H. L., *æt.* 34, came under treatment on 25th November, 1909, complaining of long-standing and very obdurate constipation. He seldom took less than 8 grs. of solid ext. cascara sagrada daily, and even so had a good deal of trouble with the bowels. He was a man of powerful physique, and had just returned from Canada, where he had been living an out of door life and carrying on a great deal of active physical work. Even with this the constipation was as bad as ever. He had dieted himself to some extent, but all to no purpose. The abdominal muscles could not be described as soft or atonic, and when the sinusoidal current was passed, even with a small current they contracted magnificently, contrasting markedly with the poor contraction which one sometimes gets in neurasthenic patients. I ordered him daily applications of the sinusoidal tri-phase current and massage before breakfast to the abdominal muscles. The cascara was continued for a day or two, when the bowels showed more sign of acting spontaneously. The patient was extremely

pleased with his progress, and left in a little over a fortnight quite well, having a daily natural motion, which he told me had not been the case with him, unless after taking medicine, for many years.

Mr. R. W., æt. 65, came to me in August, 1909, suffering from very long-standing and obstinate constipation. He was a man enjoying fairly good health apart from this, in good circumstances, and retired from business. He had tried many drugs, and had latterly been under the care of a well-known physician in the Midlands, who had put him on a practically vegetarian diet. With this he had given up medicine, and had waited several days until the bowels took upon themselves to act, when after the delay he underwent a sort of accouchement! He was put on the sinusoidal treatment on alternate days, and gymnastic exercises, with cold abdominal douching, in the morning. All drugs were stopped, with the exception of Psilium seeds, which were used daily. In a little over two weeks the patient's bowels acted with some degree of regularity every day or every other day. The rapidity with which he recovered to a normal condition of affairs was, it must be acknowledged, greatly due to the enthusiasm with which he went through the gymnastic exercises, which he seemed to enjoy thoroughly. But for this, in a man of his age, the cure would have been probably much more tedious.

The great difficulty in the more atonic cases that do not respond to treatment so readily is that it is practically impossible to get the bulk of patients to stay sufficiently long and persevere with the treatment so as to get a good and lasting result. Instance the following case:—

Mrs. B., æt. 43, came to me in February, 1909, complaining of extreme constipation, dyspepsia, flatulence, and general asthenia. She had been treated by a number of physicians in town and elsewhere, but had suffered from extreme constipation and poor health for years, aggravated recently by sickness and nursing in her family. She was extremely thin, anæmic, and easily tired. For years she had taken cascara or senna in large quantities, and latterly "two or three vegetable laxative tablets" nightly. She suffered extremely from "distension," due to intestinal flatulence and some dilatation of the colon. Massage was ordered to the abdomen every morning, and the patient also began sinusoidal treatment, with cold abdominal douching also. She was hardly

fit to do much in the way of gymnastics. The diet was suitably altered. At the end of a month she had improved very much, and was able to get along with one tablet per night or even on alternate nights. At this period she was called back home, much to my disappointment. I heard from her recently that she had maintained her improvement as regards the action of the bowels, but that the distension was rather worse.

Miss M'L., a nervous girl of 25, came under treatment in June, 1910, suffering from indigestion, marked constipation, and colitis. Patient was never able to do without medicine for the bowels, and was very anxious to get well as she was going out to the East. She was ordered an intestinal douche with protargol thrice weekly, some abdominal massage daily, and the sinusoidal treatment. She also took a little agar-agar at meals at first. All drugs were stopped. A good deal of mucus was always passed, and the stools were very offensive with much undigested *débris*. At first the patient did not make much headway, but complained of the usual indigestion, and seemed depressed. Improvement gradually took place, however, and she was able to leave, after five weeks' treatment, in good health, with the bowels acting regularly, and reported herself to her home doctor as cured.

Miss D., a young lady of 26, sent me by Dr. Garnett Wilson, had suffered very markedly from constipation, and depression associated with it. She menstruated first at 15, and since then had only been unwell about half a dozen times. She had well-marked mucous colitis, and for this had undergone a course of douching at a well-known English health resort in the summer of 1909. Her friends were very anxious about her, as she was one of two daughters, and her sister was a chronic invalid. She was ordered agar-agar daily, all other medicine being stopped. A Plombières douche with protargol and the electrical treatment were given as in the preceding case. The patient improved steadily, the mucus disappearing from the stools, which became regular with a daily action. During treatment the patient had a period, and she left at the end of five weeks feeling very fit. I have since heard that the improvement was maintained.

Mrs. L., a young married lady of 32 (ii-para), came to me at the end of August, 1910, to see if anything could be done for her constipation, which she had had since childhood.

She was a well-nourished, active woman, who played tennis, golfed, and took a great deal of exercise generally. She looked the picture of health, but she had the most obstinate constipation for which she had taken all manner of drugs, and was now in the habit, she told me, of taking three or four vegetable laxative tabloids nightly. This lady was on the way home from her summer holiday, and had just "looked in for a week *en route*." She confessed she took up the treatment with very little hope of any benefit, and, indeed, felt absolutely sceptical as to its efficacy. At the end of a week, however, of sinusoidal treatment, with abdominal massage and douching, she had improved so much that she made up her mind to give the treatment a thorough trial, and made arrangements to make an indefinite stay. The vegetable laxatives were gradually stopped. I at first tried to substitute agar-agar, but the patient did not like it. She steadily went on with the treatment for six weeks, with a break during the time of her period, and she left quite well, with the bowels acting regularly without drugs. I recommended her to make arrangements during the winter to get either some abdominal massage or coarse faradism applied to the abdomen periodically in view of the long-standing nature of her case, and she expressed her intention of returning next year for further similar treatment to ensure her being absolutely and permanently cured.

Perhaps the most satisfactory case was that of an American lady, Miss E., sent me by Dr. Angus Macdonald, of Edinburgh, at the end of July, 1910, suffering from a mild degree of colitis, with marked constipation, amounting to paresis of the intestine. This was brought on, the patient told me, by the injudicious and persistent use of enemata and intestinal douches until the bowel refused to respond to this or to drugs. The patient was in a very hopeless condition. She was 58 years of age, and, after allowing for the faded-leaf colour peculiar to American ladies past their prime, could only be described as jaundiced in appearance. I ordered her the usual course of sinusoidal currents and physical treatment, along with some regulin. This was quite insufficient to get the bowels to act, however, and every two or three days she required a good strong purge to clear away accumulations. She then began again with the regulin, and at the end of about three weeks was able to dispense with all other drugs and get a motion practically daily. During the first fortnight an intestinal douche was given. The

patient had a liver pack about twice a week, and vibration over the liver. This, I may say, I have found invaluable in cases of sluggish liver with pale stools. Week by week the condition of the bowels improved, and along with that the patient's spirits. She repeatedly postponed her departure, until, at the end of September, she was feeling quite well, and all treatment was stopped unless the taking of a little agar-agar at meals. The patient enjoyed a holiday thus for the last ten days, and left for America in good health, full of gratitude, and in good spirits.

My experience with the above treatment has been so favourable that I feel justified in saying that there is no case of ordinary constipation, not of the spastic type, which cannot be cured by it, if only the patient will take the time necessary, which may run on to two or three months. Of course, one must exclude actual contracture of the intestine and new growths.

Bearing in mind Dr. Goodhart's very wise remarks as to patients allowing their bowels to become an obsession, I always try to assure them that a daily motion is not *absolutely* vital. At the same time, few will be satisfied until they reach that state of bliss unaided by any drug. I have found it best in many cases not to immediately do away with whatever drug the patients are taking, but to induce them to stop it gradually, replacing it with agar until the bowels respond normally to the electrical treatment. I think it may be submitted that agar-agar, which merely increases the bulk of the stools, is more of a food than a purgative.

In conclusion, I might remark that it is surely wise for any intractable case of constipation, in which doctor and patient have alike abandoned hope, to undergo a course of treatment as sketched out above before submitting to the last desperate measure of excision of the colon so vigorously advocated by Mr. Arbuthnot Lane.

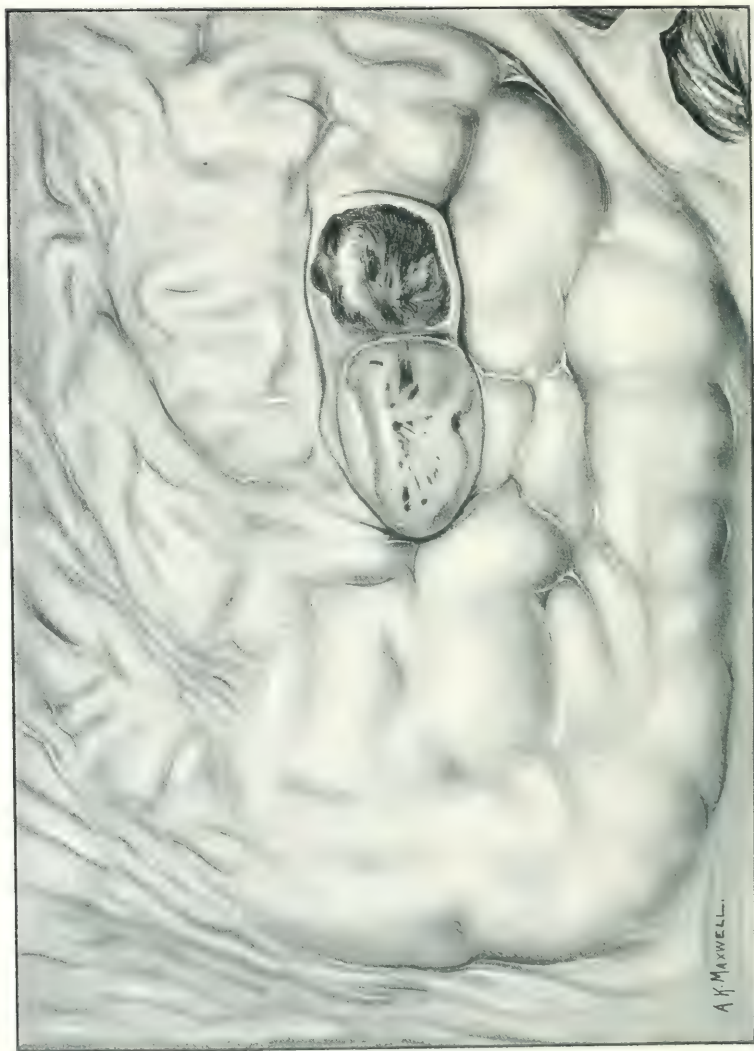


PLATE I.
GASTRIC ANTHRAX LESION.

To illustrate Messrs. Fleming and Stewart's communication.



PLATE II.
INTESTINAL ANTHRAX LESION.

CASE OF ASSOCIATED CUTANEOUS AND GASTRO-
INTESTINAL ANTHRAX.

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AND

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GASTRO-INTESTINAL lesions in cases of anthrax in man are of such comparative rarity that the following case seems worthy of being placed on record. Additional interest is lent by the fact that although clinically and pathologically the case was clearly one of anthrax, yet the bacteriological findings, so far as the bacillus anthracis is concerned, were of the most meagre description, both cultures and inoculation experiments giving negative results, while the proximate cause of death was a purulent peritonitis, with streptococcal septicæmia.

Clinical history.—A man, aged 36, was admitted to Ruchill Hospital on 24th March, 1910, complaining of a sore on the right side of the neck. This first appeared as an ordinary boil on 14th March, and for a week it occasioned him so little discomfort that he continued at work. On 21st March he began to feel seriously ill. He had attacks of sickness and vomiting, with some shortness of breath, while the sore on his neck assumed a more alarming appearance.

On admission to hospital the patient, who was a strongly-built, well-nourished man, looked decidedly ill. The temperature was 101·4° F., the pulse 98, and the respirations were 26.

There was marked œdema and redness over the right side of the face, scalp, and neck, spreading down over the front of the chest to a level slightly below the transverse nipple line. In the centre of this area, at a point a little below and in front of the angle of the jaw, there was a typical malignant pustule. The lesion consisted of a small central slough of a black colour, measuring about 5 mm. in diameter. Surrounding this there was a deep red ring of highly œdematous skin, on the surface of which were several small vesicles. The diameter of the whole lesion was about 2·5 cm. There was

no pain nor tenderness. A small amount of serous fluid could be expressed from the centre.

Alimentary system.—The tongue was thickly furred. There was no pain nor tenderness on pressure on any part of the abdomen. The liver and spleen appeared to be of normal size.

The heart and lungs were normal.

The urine, which was acid in reaction, and of specific gravity 1030, gave a cloud of albumen on boiling.

Three hours after admission the pustule, with an area of surrounding skin, was excised. The whole of the tissue removed measured about 8 cm. in diameter, and included the skin and subcutaneous tissue down to the level of the deep fascia. At the same time, 20 c.c. of Sclavo's serum was administered intravenously.

At 10 A.M. on the day following operation the temperature fell to 98.4° , and remained normal for twenty hours, while the pulse ranged between 98 and 108. For three days thereafter there was a remittent pyrexia, with evening exacerbation to 102° and 103° . The pulse ranged between 104 and 132, while the respirations were 20 to 30.

Vomiting, which had been a prominent symptom during the three days immediately preceding his admission to hospital, disappeared completely for four days thereafter. On 28th March, however, vomiting recommenced, and the patient complained of acute abdominal pain. Inspection revealed distension of the abdomen, which had a tympanitic note in front, but was dull in the flanks. A considerable degree of generalised rigidity and tenderness was present. The splenic dulness appeared to be slightly enlarged. The patient looked extremely ill, and the pulse was frequent and soft. The occurrence of these abdominal symptoms strongly suggested the presence of anthrax lesions somewhere in the alimentary tract, and when general peritonitis clearly manifested itself, it was considered that operative interference was inadvisable.

On 30th March the amount of fluid in the abdomen had increased, and the general condition of the patient was decidedly worse. The vomiting and abdominal pain continued. Thereafter the patient gradually sank, and died on 1st April, 1910.

During the last few days of life he presented the typical appearance of a case of septicæmia. For twelve hours before death there was a considerable amount of twitching of both the arms and the legs. The pupils were equal and contracted, the patient being under the influence of morphine. Towards

the end there was a certain amount of delirium of a quiet kind.

Treatment by Sclavo's serum was carried out during the whole period of the patient's residence in hospital as follows:—

March 24,	.	.	.	.	20 c.c. intravenously.
„ 26,	.	.	.	.	30 „ intracellularly.
„ 27,	.	.	.	.	40 „ „
„ 28,	.	.	.	.	30 „ intravenously.
„ 29,	.	.	.	.	30 „ „
„ 30,	.	.	.	.	40 „ „

Post-mortem examination.—This was made twenty-four hours after death. A considerable amount of sanguinolent fluid had exuded from the mouth and nose. The operation wound in the neck was healthy looking, but showed little sign of granulation; there was no surrounding œdema nor inflammation.

The *pericardium* contained about 30 c.c. of clear yellow fluid. The *heart* was of normal size. The muscle was very soft and dark in colour. There were no hæmorrhages under the endo- or epicardium, and the valvular apparatus was normal.

The *lungs and bronchi* appeared normal, with the exception of some œdema at both bases and a small obsolete and calcareous tuberculous lesion at the right apex. There was no excess of fluid in the pleural sacs, and the only adhesions were those corresponding to the lesion in the apex of the right lung. There were no enlarged glands in the mediastinum.

On opening the *abdomen* there was found to be an acute generalised peritonitis, with marked distension of the gut, and a large amount (fully 4 litres) of purulent fluid. On one of the presenting loops of small intestine there was a purple gangrenous-looking area, measuring about 2.5 cm. in length by 1 cm. in breadth, and surrounding and partly covering this there was a thick layer of fibrino-purulent exudation. A similar layer clothed the hepatic aspect of the stomach. In addition, the whole serous surface of the stomach and bowel was markedly congested, and there appeared to be no part of the peritoneal sac to which the inflammatory process had not extended.

Alimentary canal.—When the *stomach* had been laid open, the posterior surface and fundus were found to be fairly normal, the former showing only slight *post-mortem* digestion.

The greater part of the anterior wall, however, to within 10 cm. of the pylorus, was greatly thickened, œdematous, and infiltrated. The area involved, which was roughly oval, measured about 17 cm. in long diameter by 10 cm. transversely. It was not uniformly œdematous, but presented irregular nodular swellings of various sizes where the infiltration and œdema were specially well marked. (See Plate I.) On the margin of this area nearest the greater curvature, two of the largest of these nodules had sloughed, so that each now presented a flat necrotic surface, with a certain amount of inflammatory reaction round the margin. These masses were elevated about 6 mm. above the rest of the mucous membrane, from which also they were sharply demarcated. The central slough of the larger one (which, owing to the position of the specimen, appears the smaller in Plate I) measured about 2 cm. in diameter, and was quite black in colour. In the smaller, which lay towards the pyloric end, the process seemed to be less advanced, the central slough being yellow in colour, with black spots dotted over it. These lesions corresponded to the area of fibrino-purulent effusion on the serous surface. On the greater curvature of the stomach, close to the two sloughing masses just described, there were numerous discrete yellow pea-like nodules of infiltration, evidently similar to the larger masses though less advanced. About 5 cm. from the pylorus, and also on the greater curvature, there was a solitary ulcer, measuring 6 mm. in diameter, with a sharply defined elevated margin and a brownish central slough. The mucous lining of the stomach was quite intact, except for the three sloughing areas above mentioned. On cutting into one of the larger un ulcerated masses, the thickening was found to involve chiefly the submucous tissues, the vessels of which were greatly engorged, while here and there small hæmorrhagic areas were seen. The central portion of the mass consisted of highly œdematous tissue, while round about and accompanying the dilated vessels there was a yellowish zone of pus. The gastro-colic omentum, just where it leaves the greater curvature, and in immediate relation to the two gangrenous ulcers within that organ, was very much thickened and congested. On cutting into it an abscess cavity was laid open, containing about 4 cub. cm. of blood-stained purulent material. The *pylorus* was healthy. In the *duodenum* there were seven gangrenous ulcers, varying in diameter from 3 to 12 mm. Each of the sloughs showed a certain amount of

bile staining, and this was more pronounced in the four which lay below the entrance of the bile duct than in those situated above it. The ulcers were situated on the valvulae conniventes, so that each lay with its long axis transverse to that of the bowel. The margins of the ulcers showed marked inflammatory reaction. In no case did the necrotic process extend through to the peritoneal coat, and the only evidence of pathological change on this aspect of the gut was some injection of the vessels. In the rest of the *small intestine* only five of these ulcers were found, and all presented appearances similar to those described. The situation of the ulcers bore no constant relationship to the attachment of the mesentery. The most striking of the intestinal lesions (see Plate II) was situated near the junction of ileum and jejunum, and corresponded to the gangrenous area on the peritoneal surface seen when the abdomen was first opened. The main part of this ulcer measured 3 cm. in length by 5 mm. in breadth, and situated at one end of it there was another small ulcer. The margin rose abruptly from the mucous surface, and the bowel wall in the immediate neighbourhood of the lesion was dark and gangrenous looking. This was surrounded in turn by a narrow zone of intense congestion. It seemed quite clear that at this particular point the whole thickness of the bowel wall had undergone necrosis, and this was certainly the place where the inflammatory reaction of the peritoneum was most striking. The other four intestinal ulcers were smaller and did not involve the whole thickness of the wall. Two of them occurred in the jejunum, and the other two near the ileo-cæcal valve. The mesentery corresponding to these ulcers, and especially to the largest one, was very oedematous and thickened, and showed streaks of hæmorrhage and intense congestion. The mesenteric glands were but slightly enlarged. The *large bowel* appeared normal except for the signs of peritonitis.

The *liver* was of normal size and pale in colour, but otherwise showed no pathological change.

The *spleen* was small and shrunken, with a crumpled up capsule, while on section it was pale and fibrous. The appearance suggested that the organ had recently been considerably enlarged, and had undergone rapid shrinkage in size.

The *kidneys* were slightly pale, otherwise normal. The capsules were not adherent.

The *pancreas* and *suprarenal* seemed normal. The peritoneum covering the pancreas presented numerous small whitish areas resembling fat necrosis.

No examination of the head was permitted.

Histology and bacteriology.—The bacteriology of the case was systematically investigated both by ourselves in the laboratory of Ruchill Hospital and by Dr. R. M. Buchanan in the Glasgow Public Health Laboratory.

1. *Histology.*—A section of the original *cutaneous lesion*, removed a week before death, showed necrosis involving the whole thickness of the skin and the most superficial layer of the subcutaneous tissue. The slough was surrounded by a fairly definite line of demarcation, with much exudation of polymorphonuclears, many of which showed striking degenerative changes. This inflammatory reaction, however, together with marked cedema, was present to a greater or less extent throughout the whole thickness of the subcutaneous tissue. The cuticle was markedly vesiculated, and the spaces were filled with a finely reticular fibrinous material, with many red blood corpuscles entangled in its meshes. Certain of these vesicular spaces were packed with a thick felting of long filamentous organisms. These took on a pinkish purple stain with Geimsa's method, and were Gram-negative. They were of very large size, measuring about $2\ \mu$ in diameter. The length of the individual organisms could not be estimated, as no lines of division were visible, and the long filaments were inextricably intertwined. The appearances suggested that this was a saprophytic parasite. At certain points a few of the organisms had penetrated a little more deeply into the necrotic cutis, but otherwise they were strictly confined to the vesicular spaces of the cuticle. In the most superficial layers of the epidermis, and extending down the hair follicles, there were numerous staphylococci and streptococci. Irregularly distributed throughout the necrotic tissue there were a very few large Gram-positive bacilli, with square ends, measuring about $6\ \mu$ in length by $1.5\ \mu$ in breadth. Occasionally these were seen in pairs lying end to end. This organism had the morphological characters and staining reactions of the anthrax bacillus. The lesion, after removal, was cut in two with a sterile knife, and agar slopes were inoculated from the freshly cut surface. On these a copious growth of staphylococci and streptococci was obtained, but no bacilli of any kind could be detected.

The rest of the investigation was entirely *post-mortem*, and,

therefore, performed after the therapeutic administration of 190 c.cm. of Sclavo's serum. This may have accounted for the negative character of the later bacteriological findings.

Gastric lesion.—A section through the whole thickness of the stomach-wall was taken from one of the large indurated masses where the mucosa was still intact. Microscopically, this showed that the increase in thickness was practically confined to the submucosa. In the centre of this area there was very intense oedema with necrosis of the fixed tissue elements, while peripherally there was a zone of intense polymorphonuclear infiltration. Running athwart the necrotic area, and frequently accompanying blood-vessels, were numerous broad bands of leucocytes.

Many of the polymorphonuclears in both situations showed well-marked degenerative changes. The mucous membrane, at anyrate in its more superficial layers, was almost completely necrosed, while in the deeper layers the epithelium lining the Lieberkuhn's follicles was more or less desquamated. In this region, also, there appeared to be some proliferation of the fixed tissue cells, though only an occasional polymorphonuclear was present. Immediately the muscularis mucosæ was crossed, the zone of necrosis and leucocytic infiltration was entered on. The muscular coat was considerably infiltrated with polymorphonuclears, while the peritoneal coat was clearly in a state of acute inflammation, being covered with a thick layer of fibrinous exudation. In sections stained by appropriate methods (Giemsa, Gram, and Leishman), numerous bacilli of two types were seen in the necrotic mucous membrane. The more abundant of these was a small Gram-negative coliform bacillus, while the other was a large Gram-positive organism. In the deeper layers of the mucosa there were several large colonies of streptococci, staining pink with Giemsa and decolourised by Gram's method. A similar streptococcus was found immediately under the muscular coat, corresponding in situation to the peripheral layer of leucocytic infiltration. The most striking feature of the central necrotic area was the almost entire absence of organisms of any kind. In the inflamed serous coat there were numerous Gram-positive streptococci and bacilli.

Intestinal lesions.—One of the small ulcers of the bowel was fixed, as in the case of the stomach, in absolute alcohol, cleared in xylol, and embedded in paraffin. The ulcer was situated on one of the valvulæ conniventes, and the sections were cut in a direction transverse to its long diameter. On microscopic examination, the lesion was seen to consist of a

central slough involving the whole thickness of the mucous membrane, and extending well into the submucous coat. The muscular coat, though otherwise intact, was extremely infiltrated with round cells and polymorphonuclears, while the serous layer showed evidence of acute inflammation. Surrounding the slough on its deep aspect there was a well-marked zone of inflammatory reaction. In the floor of the ulcer this consisted chiefly of leucocytic infiltration, but at the margins the reaction was chiefly evidenced by intense congestion and hæmorrhage. The slough contained an enormous number of organisms, viz., streptococci, small Gram-negative coliform bacilli, and Gram-positive bacilli of various sizes. The streptococci, which were Gram-positive, were most numerous in the floor of the ulcer, while in the deeper layers of the submucosa, as well as in the muscular coat, only an occasional colony of these organisms was seen. In the peritoneal coat, and especially in the inflammatory exudate covering it, there were enormous numbers of streptococci and a few bacilli, both Gram-positive and Gram-negative.

In both stomach and bowel, as well as in all other organs examined microscopically, the blood within the vessels was found to contain organisms of two types, viz., a streptococcus and a large bacillus, both Gram-positive.

Spleen.—The splenic substance showed no striking departure from normal, except that the organ appeared to be depleted of blood, and there was an acute inflammation of the peritoneal coat. Scattered throughout the section were a few large colonies of streptococci, and in the inflamed peritoneal coat these organisms were very abundant. A few large Gram-positive bacilli and one or two small Gram-negative bacilli were also present. A precisely similar bacteriological picture was seen in smears of the splenic pulp.

Lung.—In sections stained by hæmalum and eosin, the most striking feature was the presence in the alveoli of varying amounts of granular material, together with a considerable number of pigment-containing catarrhal cells, otherwise there were no inflammatory changes. Small consolidated patches were scattered irregularly throughout the section, apparently areas of collapse. In sections stained with Gram and Giemsa, the whole of the pulmonary tissue was found to be invaded by organisms similar to those found in the gastric and intestinal lesions. This, together with the absence of any reactive phenomena, suggested that the microbic invasion was either entirely or in great part a *post-mortem* occurrence.

Liver and kidney.—These showed cloudy swelling.

Heart.—This organ appeared normal.

2. *Bacteriology.*—The following are the results obtained by us in the laboratory of Ruchill Hospital:—

Cultures of the patient's blood made shortly after admission yielded negative results.

Films of blood made at the time of the *post-mortem* examination showed the presence of three organisms—(1) Gram-positive streptococci; (2) long thick Gram-positive bacilli; (3) small Gram-negative coliform bacilli.

Films of the intraperitoneal pus showed an abundance of polymorphonuclear leucocytes and two varieties of organisms, viz., (1) numerous streptococci; (2) small Gram-negative coliform bacilli.

Cultures were made with blood removed under aseptic precautions from the unopened right ventricle, with the following results:—

A. On blood serum and agar slopes there grew (1) streptococci; (2) small Gram-negative coliform bacilli.

B. In glucose-agar stabs there was great gas formation, and the two following organisms were present in large numbers:—(1) Small Gram-negative coliform bacilli; (2) large Gram-positive bacilli. A white mouse was inoculated with this mixed growth, but no pathogenic effect was noticed.

Cultures from the spleen gave the same results as the blood cultures.

A guinea-pig was inoculated in the subcutaneous tissues of the abdomen with blood removed aseptically from the unopened heart. Death took place sixty hours later. The subcutaneous tissues over the front of the chest and abdomen were infiltrated, œdematous, and necrotic, but there was no putrefaction. Some gas formation had taken place near the site of inoculation. The viscera were normal except for some focal necrosis in the liver.

Smears of the guinea-pig's blood, of the spleen, and of the cellulitic exudate showed the presence of two organisms in large numbers—(1) streptococci (Gram-positive); (2) coliform bacilli (Gram-negative).

As in the case of the man, cultures were made on various media with blood removed aseptically from the unopened heart. The only organisms which grew were the two just mentioned.

Histological examination of the viscera failed to reveal the presence of anything at all resembling the bacillus anthracis. In the blood-vessels, streptococci and coliform bacilli were

seen. The liver showed a few large areas of necrosis with hæmorrhage in their interior. The other organs were normal except for a certain amount of cloudy swelling.

A white mouse was also inoculated hypodermically with some of the patient's blood, and death occurred, in this case, ninety-two hours later. The viscera appeared normal. All over the front of the abdomen, and especially round the site of inoculation, the subcutaneous tissues were hard, sodden, and necrotic looking, but there was no gas formation. Smears of the blood and of the spleen showed the presence of a Gram-positive diplococcus only. In the cellulitic fluid the same organism was present in large numbers, and a few Gram-negative coliform bacilli as well. Cultures on various media from the blood of the mouse yielded a pure growth of streptococcus.¹

The following are the results obtained by Dr. R. M. Buchanan at the Glasgow Public Health Laboratory:—

1. Material on swab from cutaneous anthrax lesion, obtained on 24th March, immediately before the patient's transference to Ruchill. Microscopical and cultural examination showed the presence of streptococci.

2. Fluid from vesicle. Microscopical and cultural examination showed the presence of staphylococci. A guinea-pig was inoculated intraperitoneally with some of the fluid, with negative result.

No trace of bacillus anthracis was found in either specimen.

3. A portion of the patient's spleen was submitted to bacteriological examination with the following result:—Microscopical and cultural examination showed the presence of the following organisms—(a) streptococci; (b) a large Gram-positive anaërobic bacillus (*bacillus aërogenes capsulatus*); (c) a small Gram-negative coliform bacillus. Subsequent diagnostic cultural tests revealed the following:—(1) *Bacillus Grünthali*; (2) lactic aërogenes; (3) *bacillus proteus vulgaris*.

Two guinea-pigs were inoculated (1) subcutaneously and (2) intraperitoneally. Guinea-pig (1) died within forty-eight hours, and the streptococcus and coliform bacillus were recovered from the tissues. Guinea-pig (2) died of acute peritonitis within seventy-two hours, and the streptococcus and coliform bacillus were recovered from the peritoneal exudate.

Occupational history of patient.—The following account is

¹ The inoculations were performed by Dr. Stewart.

taken, with Dr. Chalmers' permission, from his report to the Health Committee of the Glasgow Corporation:—

"Patient had been employed as a bass brushmaker (the bass being a foreign grass), and worked with three others similarly occupied at a table in a room where also some workers in hair were engaged. . . . The use of hair in the workroom referred to readily suggests itself as the source of infection, but the patient had not himself worked with hair for several months, whereas five others of his fellow-workers were constantly employed therewith. On the assumption that infection was obtained from this source, the customs of the individual workers become important as possibly affording an explanation of the incidence of the disease in this particular worker. These were inquired into, and it was ascertained that deceased was in the habit of keeping the material with which he worked, and his apron, in a movable open box which usually stood against the partition behind his own bench, and distant about 3 feet from the nearest hair-worker. Deceased was the only one who made a practice of so keeping his apron, the others hanging them on nails when not in use. The floor of the premises was swept daily, so that any dust derived from small quantities of infected hair would most likely be carried off in the process of daily cleansing. The box, however, in which deceased kept his apron was an exception to this. It was not swept daily, and, as a matter of fact, the bottom contained a considerable quantity of dust, among which fragments of undyed hair have been recognised. Here, then, an opportunity would seem to have been afforded of retaining the dust until some suitable occasion would present itself, on which inoculation might occur, and the occasion would appear to have been supplied by the appearance of the boil¹ on the deceased's neck, as the hands and nails might readily enough become carriers of the dust which his apron had opportunity of picking up every time it was deposited in the box in question."

A bacteriological examination of the various materials from the workroom was made by Dr. R. M. Buchanan, with the following results:—

1. Cultural examination of the Bahia and African bass handled by the patient showed the presence of *bacillus subtilis* but no trace of *bacillus anthracis*.

2. Cultural examination of one sample of dust and nine

¹ It is here assumed that the cutaneous lesion was originally a simple boil.

samples of hair from different sources showed the presence of bacilli of the *bacillus subtilis* type but no trace of *bacillus anthracis*. Guinea-pigs were inoculated with 1 cub. cm. of the washings of each sample with negative results.

Summary and conclusion.—This, then, is a case which clinically appeared to be one of anthrax. The cutaneous lesion was a typical malignant pustule, with a black central slough, peripheral vesication, and very intense surrounding oedema. The gastro-intestinal lesions discovered at the *post-mortem* examination presented characters similar to those described by other observers in cases proved bacteriologically to be anthrax,¹ while at the same time they bore a certain resemblance to malignant pustule of the skin. Bacteriological proof, however, is lacking, except for the presence in the excised cutaneous lesion of a few bacilli having the morphological characters and staining reactions of *bacillus anthracis*. Although recovery of the bacillus in these cases is necessarily conclusive proof of the real nature of the disease, yet the converse is by no means true. Dr. Legge, in a letter to Dr. Chalmers, apropos this case, says—

“I see that the diagnosis was clinical only, but I am satisfied that such clinical diagnosis is quite sufficient in view of the instances I know of where skilled bacteriological examination failed to demonstrate the presence of the anthrax bacillus.”

Dr. J. T. Stretton, in the discussion on anthrax at the British Medical Association meeting, 1905,² said—“Bacteriological confirmation is desirable, but the negative evidence of such an investigation is not conclusive.”

With regard to the finding of bacilli only on histological examination, we would quote the following passage from Muir and Ritchie³—“In a case of suspected malignant pustule, film preparations should be made from the fluid in the vesicles, or from a scraping of the incised or excised pustule, and stained with a watery solution of methylene blue, and also by Gram's method. By this method practically conclusive evidence may be obtained, but sometimes is doubtful, as the bacilli may be very few in number. In all cases confirmatory evidence should be obtained by culture. Occasionally they are so scanty that both film preparations

¹ Teacher, *Lancet*, May, 1906; Scott, *British Medical Journal*, 1901, vol. ii, p. 136.

² *British Medical Journal*, 1905, vol. ii, p. 936.

³ *Manual of Bacteriology*, third edition, p. 301.

made from different parts, and even cultures, may give negative results, and a few bacilli may be found when a section of the pustule is examined."

During the week which elapsed between the excision of the pustule and the fatal termination, 190 c.c. of Selavo's serum were administered. It is, therefore, not surprising that efforts to recover the anthrax bacillus from the tissues after death failed.

The proximate cause of death was septicæmia following streptococcal peritonitis. In all probability the organisms gained entrance to the peritoneal sac by sloughing of the floor of one of the intestinal ulcers, although no gross perforation was detected. A similar phenomenon was observed in the case recorded by Teacher. The coliform bacillus, which was present both in the blood and in the peritoneal pus, appeared to be etiologically concerned, along with the streptococcus, in the production of both the peritonitis and the septicæmia, and its pathogenicity is further demonstrated by the results of certain of the inoculation experiments. Then as a terminal event there occurred invasion of the blood by the bacillus *aërogenes capsulatus*.

The question as to whether or not the cutaneous manifestation preceded the visceral in point of time is one which cannot be definitely settled. If, as Dr. Chalmers suggests in his report, the original boil was of a simple character, and subsequently became infected with anthrax, then this secondary infection must have occurred only a few days prior to the patient's admission to hospital on 24th March. But gastric symptoms, pain, sickness, and vomiting were present as early as 21st March, so that, calculating on this basis, it is reasonable to suppose that infection by the cutaneous and by the gastro-intestinal epithelium took place pretty much at one and the same time. If, on the other hand, the skin lesion was specific from the outset, then the probability is that the gastro-intestinal affection was secondary to the other. In any case, there can be no doubt that the lesions in the stomach and bowel were due to the ingestion of anthrax bacilli or their spores, the latter more probably, since the bacilli readily succumb when exposed to the action of the gastric juice. Moreover, there is no evidence that the patient at any period of his illness had an anthrax septicæmia, and it is therefore very unlikely that these internal manifestations were due to metastasis of organisms by the blood-stream.

That there was nothing of the nature of pulmonary anthrax in the case is clearly shown both by the absence of pulmonary

symptoms during life and by the fact that no lesion ascribable to anthrax was discovered *post-mortem* either in the lungs or in the bronchi.

We wish to express our indebtedness to Dr. Brownlee, of Ruchill Hospital, for much help in the investigation of the case, as well as to Dr. A. K. Chalmers, Dr. R. M. Buchanan, and Dr. Legge for the use of various reports and communications bearing on the case.

CURRENT TOPICS.

UNIVERSITY OF GLASGOW: GRADUATION LIST.—The following degrees were conferred at the graduation ceremony on 24th April, 1911:—

DOCTORS OF MEDICINE (M.D.).

- James McClure, M.B., C.M., Scotland—Thesis, "The relation of chronic infection to rheumatoid and allied forms of arthritis, with illustrative cases."
 James McKay, M.B., C.M., Scotland—Thesis, "Intussusception of the bowel in children."
 George Wardlaw Milne, M.B., C.M., Scotland—Thesis, "Traumatic neurasthenia."

MASTER OF SURGERY (CH.M.).

- James Rutherford Kerr, M.B., Ch.B., Scotland—Thesis, "Ten typical cases from a glass works surgery, and two thoracoplastic operations."

DOCTORS OF SCIENCE (D.Sc.).

- Robert Thomson Leiper, M.B., Ch.B.—Thesis, "Helminthological contributions, and other published papers."
 Jane Hamilton McIlroy, M.A., B.Sc., M.B., Ch.B.—Thesis, "The independence of the peripheral sensory neurone in view of the results of experimental section of the optic nerve in a large series of rabbits and in one monkey;" with additional papers.

BACHELORS OF MEDICINE AND BACHELORS OF SURGERY (M.B., CH.B.).

I. WITH HONOURS.

1. David Thomas Crichton Frew, Scotland.
2. William MacMurray, „

II. WITH COMMENDATION.

- | | |
|-------------------------------|-----------|
| 3. John Gibson, M.A., | Scotland. |
| 4. John Ferguson Smith, M.A., | England. |
| 5. Alexander Stewart Wilson, | Scotland. |
| 6. James Wallace Anderson, | " |
| 7. James Turner Brown, | " |

III. ORDINARY DEGREES.

James Browning Alexander,	Scotland.	Malcolm Manson, M.A.,	Scotland.
Donald Arbuckle,	England.	Frank William Martin,	England.
Agnes Barr Auchencloss,	Scotland.	Robert Stewart Miller,	Scotland.
Charles Averill,	"	John Mowat,	"
Christina Barrowman,	"	Hugh Loudon Neil,	"
Marie Alexina Annette Beard,	"	Arthur Poole,	"
	England.	Arthur Stanley Richmond,	"
Alexander Hogg Brown,	Scotland.	Barbara Grace Rutherford,	"
James Buchanan,	"	John Livingstone Scott,	"
Donald Downie,	"	William Sneddon,	"
Robert Findlay,	"	John Stewart,	"
Thomas Loudon Fleming,	"	John Torrance Weir Stewart,	"
Thomas Scoular Fleming,	"	Thomas Louis Grenet Stewart,	"
	New Zealand.		Scotland.
Hugh Forrest,	Scotland.	Barbara Sutherland, M.A.,	"
Thomas Lochhead Fraser,	"	Alexander Gold Waddell,	"
Andrew Garvie,	"	James Douglas Walker,	"
Andrew Smith Hannay,	"	Alexander Guthrie Semple Wallace,	"
William Johnstone,	"		Scotland.
James David Mackinnon,	"	James Williamson (Holytown),	"
Stephen Anderson MacPhee,	"	George Jackson Wilson,	"
George Hanson M'Robert,	"	Fergus Hay Young, M.A.,	"
John Pearson M'Vey,	"	John Young,	"

APPOINTMENTS.—W. H. Brown, M.D.Glasg. (M.B., Ch.B., 1901), has been appointed Physician for Diseases of the Skin to the Victoria Infirmary, *vice* the late Dr. D. Couper.

Ivy M'Kenzie, M.A., B.Sc., M.B., Ch.B.Glasg. (1902), Hugh Morton, M.B., Ch.B.Glasg. (1907), and Geoffrey B. Fleming, B.A., B.C.Camb. (1908), have been appointed Extra Dispensary Physicians to the Western Infirmary.

A. J. Mitchell, M.D.Glasg. (M.B., Ch.B., 1902), has been appointed District Medical Officer of the Gloucester Union.

W. Semple Young, M.D.Glasg. (M.B., C.M., 1893), has been appointed Medical Referee under the Workmen's Compensation Act for the Sheriffdom of Stirling, Dumbarton, and Clackmannan, to be attached more particularly to the Dumbarton district.

J. Ronald Currie, M.A.Edin. and Oxon., M.D.Glasg. (M.B., Ch.B., 1898), D.P.H.Birm., Medical Officer for Chester, has been appointed Medical Officer of Health for Fife, *vice* Dr. Hugh A. Macewen.

William A. Stuart, M.B., Ch.B.Glasg. (1905), has been

appointed an Extra Dispensary Physician to the Glasgow Royal Infirmary.

SALVARSAN.—In our issue for April (p. 278) we drew attention to a small book by Dr. Bresler, of Lüben, giving a *résumé* of the literature of "606," or, as it has come to be called, "Salvarsan."

Since then we have received two works dealing with the treatment of syphilis by this remedy. From the reviews of these, which appear in the present issue, it will be seen that they differ from Dr. Bresler's little book, inasmuch as they give the personal experiences of the authors. The reviewer has given a fairly full account of the contents of these volumes, so that we need not here do more than refer to them. It will suffice to say that in each of them the respective authors cover pretty well the whole ground of the subject, and that readers are given an opportunity of placing themselves abreast of what is most recent in this department of medicine.

PROFESSOR CLELAND: PRESENTATION OF PORTRAITS.—The long and distinguished services to Glasgow University of Professor John Cleland, who retired two years ago from the Chair of Anatomy, were recognised in a tangible manner on 26th April, 1911, when the honorary degree of Doctor of Laws was conferred upon him and his portrait was presented to the University. A large company assembled in the Bute Hall to take part in the ceremonies. In addition to the portrait that was formally handed into the custody of the University was another—not a replica—presented to Mrs. Cleland. Each is an excellent example of the art of Sir George Reid, R.S.A. The presentations were made on behalf of Professor Cleland's former colleagues, students, and other friends. Principal Sir Donald MacAlister presided, and among those seated at the chairman's table were Professor Cleland and Mrs. Cleland, Sir James Fleming, Principal Yule Mackay, Dundee; the Rev. Dr. John Smith, Mr. Henry Barr, B.L., and Mr. Archibald Craig, B.L. (Hon. Secretary of Testimonial movement).

Professor Glaister, Dean of the Faculty of Law, in presenting Professor Cleland for the honorary degree of Doctor of Laws, said that Professor Cleland had spent a long life in the scientific teaching and exposition of anatomy, extending nigh unto half a century, first as Professor of Anatomy and Physiology in Queen's College, Galway, and latterly as Professor of Anatomy in Glasgow University, to which he

devoted thirty-two years' service in that capacity. Following that most accomplished anatomist, Allen Thomson, he had fulfilled the duties of his office in the highest sense, and his work would be held in esteem by the long line of students whom he had taught. While Professor Cleland's pen had been chiefly occupied in the exposition of the subjects with which his name would mainly be associated, it also had been devoted to philosophical essays of a scientific character, and upon occasion had strayed into the lighter fields of literature. His work as editor of the seventh edition of *Quain's Anatomy* was held in high esteem by all anatomists, and his work jointly with Principal Mackay on *Human Anatomy* had for many years held a foremost place as a text-book in the schools. Professor Cleland already possessed many academic honours. Although a Doctor of Laws of the Universities of St. Andrews and Edinburgh, he would not less esteem the honour which Glasgow University now desired to confer upon him, since it was offered to him as an expression of his great worth as a professor and scientific anatomist.

Professor Cleland was capped amid loud applause, and he afterwards subscribed the roll.

The Principal then intimated that the assembly of the Senate was dissolved, and they were now met as the friends of Professor Cleland to take part in an interesting ceremony.

Principal Yule Mackay, in making the presentation of the portrait to the University, said that as one of Professor Cleland's old students he had often wondered how a man could have found time within the space of forty years to have learned so much as Professor Cleland, and have succeeded also in maintaining in the perfection of health a physical frame which would have well become one of the ancient Greek heroes. He feared that in their earlier days they were not always able to follow the Professor in his flights into the more obscure regions of morphological analysis and deduction. These were frequently unpremeditated, and took place in parenthetical passages of the ordinary lecture; but none the less the parentheses were to them the most interesting parts of the whole prelection; it was in them that he revealed himself most thoroughly. To him the science of anatomy was no outside factor in his life; it permeated his whole being. One great attribute which won their hearty admiration was his dependence on himself. Even in their student days they were aware that he was fighting fearlessly for the truth as he knew it against what might be called the fashionable

scientific dogma of the day, and they rejoiced to know that he succeeded. The views which he steadfastly maintained thirty years ago were now appreciated by all and accepted by most biologists of the day. One other feature that appealed very deeply to them and was an essential factor in influencing the character of his life's work was Professor Cleland's appreciation of beauty. They all knew him to be a poet, but not so many knew that he was also an artist of no mean ability as to technique and richly gifted with the artist's comprehension of nature. In conclusion, Principal Mackay said that no one had done more than Professor Cleland to reconcile the purposes of science with those of religion and philosophy, and to show that their real results were at one.

Principal Sir Donald MacAlister said that not for the first time it was his good fortune to have to acknowledge on behalf of the University the gift of a work of art in commemoration of Dr. Cleland's long and fruitful career in Glasgow. The museum he founded was adorned with a striking medallion portrait which bespoke at once the taste and the loyalty of his former demonstrators and assistants. Now their collection of portraits was notably enriched by another example of a great artist's skill in portraiture, and that gift they owed to the grateful esteem of a multitude of Dr. Cleland's pupils, colleagues, and friends in many parts of the world. On behalf of the University the Principal thanked the donors, and said that by enrolling Dr. Cleland among their honorary graduates, and that at a special assembly, the University had indicated that it was of one mind with the subscribers in desiring that fit expression should be given to their appreciation of Dr. Cleland's services to education, to science, and to the life and reputation of the University of Glasgow. The subscribers had been happily inspired to combine with their presentation to the University a presentation also to Mrs. Cleland, who in the family circle of the Professors' quadrangle held a place that would not soon be forgotten. It was fitting that they should recognise her unobtrusive but effective share in Dr. Cleland's accomplishments.

Mr. Henry Barr presented to Mrs. Cleland a second portrait of Professor Cleland, also painted by Sir George Reid.

Professor Cleland thanked the subscribers for the most substantial token of good feeling they had shown for one who had tried as he best could for a number years to do faithfully the work to which he had been appointed. After referring to the old problems of free will and fixed fate, he said he often thought of these when he considered how it

came about that he became an anatomist. At the time of his leaving school he was very near becoming a minister, being influenced in that direction by the circumstances in which he was placed. He could even recollect perfectly well making a remark on the subject to his mother, and in a critical moment discovering that in her secret heart the motherly hope was that he would follow his father's profession and study medicine. And glad he was that it was so. His one aim was then to fit himself to be a practitioner. After dealing with his student days and early training in medicine and anatomy, and alluding to his Continental travel, Dr. Cleland said that after being for four years on Professor Goodsir's staff of demonstrators he accepted the post of demonstrator under Professor Allen Thomson at Glasgow in 1861. Thus commenced his first connection with the University of Glasgow, and very curious it was now to look back on his teaching and lecturing in the old College. Of the occupants of the Chairs when he came then only one survived—namely, Lord Lister. In December, 1863, he (Dr. Cleland) was appointed professor in Queen's College, Galway, and it was there that in full force he learned the importance of the advice which Professor Goodsir had often given him—never to give up attention to medical practice till he secured a permanent anatomical appointment. No man was a fit teacher of anatomy who was not in a position to apply it to the teaching of both medicine and surgery. In 1877 he returned to Glasgow to succeed Professor Allen Thomson, who ought ever to be remembered as one of the first teachers to give a due place to development in the teaching of anatomy. Referring to his esteem for Sir George Reid, Professor Cleland said anatomy and art had a very close relation one with the other. He might have been well content could something have been done to bring the Glasgow School of Art into close contact by a proper foundation for the teaching of artistic anatomy in a scientific way: but he had never been able to persuade the public that such an object was worth spending the requisite money on. He hoped, however, that even though Principal Story himself failed to awaken the necessary enthusiasm, the day might yet come when Glasgow might take the lead in such an advance. In conclusion, Dr. Cleland said his wife felt deeply grateful for the kindness shown to her.

The Rev. Dr. Smith proposed a vote of thanks to Sir George Reid, and asked Professor Cleland to accept a list of the subscribers to the presentation.

Sir James Fleming, in proposing a vote of thanks to Sir Donald MacAlister, spoke of the great interest Professor Cleland had taken in the School of Art, and the influence which he exerted upon the study of anatomy in its relation to art.

Sir Donald MacAlister having acknowledged the compliment, the proceedings terminated.

INVALIDITY INSURANCE: ATTITUDE OF MEDICAL PROFESSION.

—Dr. Norman Walker, Edinburgh, direct representative of the medical practitioners of Scotland on the General Medical Council, addressed a meeting of the medical profession in the Faculty Hall, St. Vincent Street, Glasgow, on 25th April, 1911. Sir David C. M'Vail presided over a large attendance, and, in introducing Dr. Walker, made complimentary reference to the manner in which he had fulfilled his duties as their representative. The position which Dr. Walker occupied, he said, was one involving great responsibilities, and those responsibilities were likely to become much greater in the immediate future. Their profession was the worst organised in the world. They had a great many societies, but those societies were of little use in dealing between the profession and outside interests. It was quite true that there was the British Medical Association. At one time he thought that that Association would have become an effective intermediary between the profession and other interests, but it had shivered itself into fragments. It was a great representative meeting. It was not executive. The Council was controlled by the representative meeting, and could do nothing in the way of independent action unless it agreed with their directions. If it disagreed there might be a referendum. In the immediate future the profession was going to be met by a very serious development of events. The invalidity insurance proposals were bound to come under any Government, were bound to take their place on the statute-book in some form or another, and they would change enormously the conditions of medical practice. The question was going to be a very great one, and would revolutionise the relationship between the profession and the public. How the profession was going to assert itself, how it was going to deal with the matter when it was before Parliament he did not know. It did not seem to him as if the British Medical Association could do much, as they had practically no executive body which was truly an executive body. Things were thrown from one body to another, and this question might be thrown out to the profession in the

way of a referendum, but that was not business. They could not accomplish any important executive manœuvre in that way. A great deal of the direction of the profession in the next few years would depend on their direct representative, who was in a sense the captain of the profession. In Dr. Walker they had an admirable captain, and he believed that in the coming difficulties—and there would be very great difficulties between the Government and the profession—they would find that Dr. Walker was a gentleman who had no superior in the qualifications which his position as their representative demanded.

Dr. Walker, in the course of his address, referred to the duties and limitations of the Council, and to the work of the various committees. Some might think that those various duties were of comparatively little interest to the general practitioner. He did not agree with that. He thought that the higher the standard to which the profession was raised by education the greater would be its influence, and he was optimistic enough to hold that that influence was never so great as it was to-day. The most important thing which the Council had done for the practitioner since he was a member was the appointment of a committee to inquire into unqualified practice in the Colonies and dependencies of the Empire and in foreign countries. The committee had brought together a great deal of valuable information. Eighty Colonies and foreign countries forbade the practice of unqualified persons under penalty of fine or imprisonment. In France, San Domingo, and Brazil persons were penalised for practising without registration whether they were qualified or not. In Australasia, Sierra Leone, Barbadoes, St. Vincent, the Falkland Islands, and Germany the conditions were the same as with us. Protection was given only to the title. The committee report had been adopted by the Council, and it was unanimously resolved that the General Medical Council, being of opinion that the present medical Acts do not sufficiently enable persons requiring medical aid to distinguish qualified from unqualified practitioners, and that it is contrary to the interests of the public that medical and surgical practice should be carried on with impunity by persons holding no recognised qualification, requests the Government to take steps for the appointment of a Royal Commission to inquire into the evil effects produced by the unrestricted practice of medicine and surgery by unqualified persons. That resolution was communicated to the Privy Council, who transmitted it to the Local Government Board. The latter body had sent out circulars of inquiry, and

had issued a blue-book containing the replies. The next step would fall to be considered at the session of the Council next month.

THE OPEN WINDOW BY COMPULSION.—We learn from our contemporary, the *Glasgow News*, 6th May, 1911, that there has been a proposal before the Health Committee of Paddington Borough Council that they should avail themselves of the Housing and Town Planning Act of 1909 to create, and enforce by fine and penalties, the following bye-law:—"Every lodger in a tenement house shall cause every window of every room which has been let to him, and is used as a sleeping-room, to be opened, and to be kept fully open, for at least one hour each morning and afternoon. The lodger shall not be required to cause any such window to be opened, or kept open, when the state of the weather is such as to render it necessary that the window should be closed, or when any bed in such room is occupied by any sick person to whom such opening of the window would prove harmful."

"In the event of this bye-law being adopted by the Council and approved by the Local Government Board (whose chief, Mr. John Burns, would doubtless give it a hearty welcome)," says the London correspondent of the *News*, "there would still be the matter of the police court magistrates, who might render the statute of no great worth by imposing nominal fines, and even making jokes in so doing."

We trust that Paddington Borough Council will achieve this step in the right direction, for, needless to say, it is no more. We could have wished they had stipulated on what we consider the most important of all—the open window at night. In the meantime, we shall watch with interest, to see how this beneficent interference with the liberty of the subject will be hailed in a land where the people dwell in castles—soon, we hope, to become by means of this bye-law, castles in the air.

This same London correspondent, on 28th April, 1911, transported us into the realms of romance and poesy with the following:—"A London medical officer of health tells me that time and again during his visits to fetid apartments he has opened the windows and told the residents they must remain open. On returning after an absence of a few minutes he has found the windows once more firmly closed. An assistant of his smashed a window the other day as a precautionary measure, but he too was foiled, for on calling later he found the aperture closed with old shirts."

Medical men are rather tired, we fancy, of reading about the doctor of fiction who makes window-breaking the chiefest of his therapeutic agencies; but how many of us, we wonder, have really met a thorough-paced window-smasher? Have many, or any, of our readers, in a purely professional capacity, resorted to this primitive method of ventilation?

In that book of delightful absurdities, *The Little Minister*, by J. M. Barrie, where the impossible is forever happening without disturbing our equanimity or enjoyment, there is a very lovable old doctor, who is in the most perfect harmony with the oddities amongst whom he practises, and who, on entering a sick room shoves his stick through the window, and before retiring lays a shilling on the table in order to undo the good he has done. How such a homœopathic dose of fresh air could have benefited the sick person we are at a loss to understand. We must remember, however, that this character was created before the open window was even in the air. Fact is not only stranger than fiction, it is in every way finer, and we turn from such mawkishly sentimental ventilation of the kailyard school to contemplate with pride and pleasure the doings of that staunch Hibernian, Dr. Henry MacCormack, of Belfast, who had the courage of his convictions, and who, in default of leaving shillings at the conclusion of his visits, was quite frequently seen, in the first half of last century, in the local police courts to answer the charge of window-breaking.

Paddington Council have our best wishes, and we trust to see them soon make all this fiction, farce, and fact about window-smashing, matters forever of the past.

GLASGOW UNITS R.A.M.C. (T.F.) AND THE VISIT OF H.R.H. THE DUKE OF CONNAUGHT.—On the occasion of the visit to Glasgow on the 3rd ult. of H.R.H. The Duke of Connaught to open the Scottish Exhibition, the route of the procession was lined by the military. In addition to the regiment in the garrison (2nd Battalion Argyll and Sutherland Highlanders), the various Territorial units of the city supplied detachments for this duty. The Royal Army Medical Corps not only took part in lining the route, but supplied twelve stretcher squads to the combatant units.

These squads were for duty solely with the military, but were instructed to give aid to any civilians requiring it, if any delay should occur in their being attended to by the personnel of the St. Andrew's Ambulance Association.

The detachment of the R.A.M.C. lining the route was

under the command of Lieutenant-Colonel A. D. Moffat, M.D., T.D., and the following officers were on parade:—Major G. H. Edington, Captains Cochrane Murray, Brownlow Riddell, and D. Shannon, and Captain A. N. Fraser, R.A.M.C., Adjutant. Leaving the drill hall in Gilbert Street at 11 A.M., the detachment took post in Buchanan Street, from Cathedral Street to Subway Station, at 11:30. While waiting here the rain descended in torrents, and no one was sorry when, at 1 o'clock, after the passage of the procession, the men were fallen in and marched to Gilbert Street, with the object of partaking of refreshments before going on duty in the next section of the route. To accomplish this it was found necessary to "step out" during the concluding half mile of the march, and, needless to say, everyone did so with heartiness. During the seven minutes' rest in the drill hall cold viands were quickly swallowed, and then, having fallen in, the party marched to their next station, which was in Argyle Street, from Claremont Street to Kent Road. During the wait here of an hour and a half the sun came out for a time, with the result that there were considerable crowds collected on the pavement. The next move was up Kelvingrove Street to the Exhibition entrance, along Parkgrove Terrace, Gray Street, and Sauchiehall Street to Radnor Street, where the Park was entered. Crossing the Park, ankle-deep in mud, the Bank Street gate was reached, and the men were placed from here to Great George Street. Bank Street is narrow at the best. The crowds gave it the appearance of a lane, and it was only after the people had been backed by the police on to the pavement that the placing of the troops could be accomplished. By this time it was 4 o'clock, and the procession was timed to pass at 4:10. But it was not till nearly 6 o'clock that the Royal carriage and escort had entered the route. Immediately the procession had passed the roadway became a moving mass, and it was by individual effort that the R.A.M.C. "fell in" at the Park gate. It did not take many minutes to march across the Park to Overnewton, where a second issue of refreshments was eagerly consumed, and the men were dismissed shortly before 7 o'clock.

It was a day to be remembered, not so much for hard work as for the weary waiting in the merciless downpour. The silver lining to the cloud lay in the reflection that there were neither rifles nor bayonets to attend to after the parade was over.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1910-1911.

MEETING V (*continued*).—16TH DECEMBER, 1910.*The President, PROFESSOR ROBERT MUIR, in the Chair.*

VII.—DR. ALEX. MACLENNAN showed—

1. *A stereoscopic picture of a case of congenital carcinoma of the testicle—(a) of the appearance before operation, and (b) the appearance of the tumour after removal when laid open (coloured).*

The following history, &c., was related:—A. P., æt. 11 months, was born with a right-sided scrotal swelling, which gradually increased. When 6 months old the swelling regressed somewhat. One brother had suffered from “diseased” bone in the lower jaw. A grandmother and two uncles died from cancer, æt. 54, 39, and 32 respectively. The swelling was smooth, painless, hard, of a uniform consistence; the testicle could not be differentiated from the epididymis; the cord and the vas were unaffected; a hydrocele of the tunica vaginalis was present. A diagnosis of syphilis was made, and active antisyphilitic treatment carried out for four months without appreciable alteration in the growth. At the end of this time, as some increase in the size of the tumour became apparent, it was excised along with the cord as far as the internal ring. Metastases occurred in the abdominal and cervical glands, and the child died, æt. 11½ months.

Dr. Dunn showed the tumour by the epidiascope, and sections were shown under the microscope of the growth, which was an adeno-carcinoma. No vestige of testicular tissue remained.

2. *A coloured stereoscopic transparency of the kidneys, ureters, and bladder removed from an infant, who survived fifty days.*

Apparently healthy at birth, he became suddenly ill on

the sixth day, with signs of enteritis (breast fed), urinary retention, and eventually urinary infection with bacillus coli communis. Irrespective of treatment, there was a daily loss of 1 oz. A hard mass—palpable in the suprapubic region, which suddenly disappeared on urination and defæcation—was eventually recognised as the bladder much hypertrophied.

Noteworthy in the picture were the enormous dilatation of the kidney pelves and the ureters, which were distended and convoluted like intestine. The bladder wall was over half an inch in thickness. A hernial sac, in connection with a left undescended testicle, was present.

VIII.—DR. J. SHAW DUNN showed—

Specimens and microscopic sections illustrative of some arterial lesions.

IX.—DR. LOGAN TAYLOR (for Dr. Dalziel) showed—

Specimens from two cases of obstruction due to granulomatous conditions of the bowel wall (resection).

X.—DR. D. DICKIE showed—

1. Specimen of bowel with enlarged glands, illustrating large columnar-celled carcinoma of cæcum, from patient, aged 27; operated on; well.

2. Sarcoma (small round-celled) of ileum, which caused acute intussusception; operated on; well.

3. Adeno-carcinoma of uterus (corporeal), with numerous myomata; operated on; well.

XI.—MR. ARCH. YOUNG showed—

Specimen of sigmoid showing an annular carcinomatous stricture, and an independent tumour, a little lower down, of simple type.

Specimen resected during life from a patient, over 70 years of age; complete obstruction caused by the cancerous tumour; symptoms of short duration. Simple tumour not recognised before removal; of type of simple vascular adenopapilloma.

Shown (1) on account of co-existence of simple and malignant tumour; (2) as suggesting a possible origin of the

cancerous tumour in an earlier simple papilloma, like the one growing independently lower down.

Sections of both tumours shown by Dr. J. Shaw Dunn.

Specimen obtained from a patient in the Broadstone Jubilee Hospital, Port-Glasgow.

XII.—PROFESSOR R. MUIR showed—

Specimens illustrating various kidney lesions, &c.

GLASGOW EASTERN MEDICAL SOCIETY.

MEETING I.—5TH OCTOBER, 1910.

DR. W. J. H. SINCLAIR, the President, gave an address on "The Unfit," which was published as an original article in our issue for January, 1911, p. 1.

MEETING II.—19TH OCTOBER, 1910.

DR. HUGH A. M'LEAN delivered an address, entitled "A Review of the Public Health Administration in Glasgow." This communication will be published as an original article in a future issue of the *Journal*.

MEETING III.—2ND NOVEMBER, 1910.

1. DR. JAMES R. RIDDELL showed cases illustrating the curative effect of radium on nævi.

Of the six patients shown, three may be said to have been cured. Two others, while very much improved, were still under treatment, and one had, in addition to receiving radium treatment, also been treated with *x*-rays.

The special interest presented by this last was that only that part of the nævus which was situated on the cheek had

had much treatment, that on the chin simply having had a few doses of radium.

CASE I.—The patient was a girl of 6 years old. The nævus affected a large area on the cheek, extending from the ear forwards to within half an inch of the angle of the mouth, and measuring about an inch vertically. A second nævus was present on the chin. It extended from half an inch under the chin upwards to the lip and into the mouth. In front, it just crossed the middle line, and behind it is limited by a line drawn downwards from the angle of the mouth. Both nævi were bright red before treatment began. After five doses of *x*-rays to the one on the cheek it had faded to a great extent. The doses were given at intervals of about a month (amount of each dose, 5 H). This was followed up by applications of radium, with the result shown. The nævus on the cheek had practically faded entirely away, and the skin was not injured or marked in any way. The nævus on the chin had not had much treatment, and was practically unaltered yet. It thus served for comparison.

CASE II.—M. M., aged 6 months. There was a small nævus, about the size of a pea, on the left cheek. It was bright red, and raised above the surface, and it was steadily enlarging. Radium was applied nine times in as many months. The result had been complete disappearance.

CASE III.—M. V., aged 9 months. There was a bright red nævus, covering the point of the nose and extending up one side to within one-third of an inch of the inner canthus. Radium was applied twenty-three times between May, 1909, and September, 1910, with the result that the nævus had disappeared, excepting a minute spot near the point of the nose, which was all but well. The skin was undamaged.

CASE IV.—A. M'R., aged 5 years. There was a diffuse nævus, with healthy skin over it. It extended from in front of the ear forwards over two-thirds of the cheek. It was circular in shape. There were a few dilated vessels radiating from its centre over the surface. Radium had been applied fourteen hours in twelve sittings, with the result that the surface vessels were all but invisible and the mass in the substance of the cheek was greatly reduced, and it was only on feeling for it that its presence could be detected.

CASE V.—J. G., aged 5 months. There was a nævus on the upper lip which had been present since birth. In size it might have been covered by a sixpenny-piece. Radium had

been applied four times, eleven and a half hours in all, and in two and a half months it had disappeared.

CASE VI.—F. E., aged 9 months. There was a large cavernous nævus situated on the lower half of the left ear, and making the lobe circular in shape. It completely effaced the free border. It extended downwards 1 inch lower than the normal lobe would do. The upper half of the auricle was "port-wine" stained, but not cavernous. On account of the size of Dr. Riddell's spread radium apparatus the nævus had to be treated in four separate parts. One part had twenty-three hours in all; the others had less. Result: The auricle was now normal in shape, and the tumour was not now erectile as it formerly was. It was very much paler. The case was still under treatment.

Dosage with a radium apparatus is a matter of time. The length of time differs for different appliances, according to the purity of the salt and the area over which a given quantity is spread. The purity is expressed in units of radio-activity; thus, in the appliances used in these cases the radium bromide is mixed with impurities in the proportion of 1 in 5, and it is spoken of as having a radio-activity of 400,000. In the flat appliance 10 mg. are spread over half a square inch; in the other, 5 mg. are heaped together in a small glass tube. To produce the same effect the former requires four times as long as the latter, but, of course, it affects a very much larger area.

In the cases shown the treatment had been given in oft-repeated doses. The same effect can be got by single lengthy doses, which is the method we now usually adopt.

2. DR. JOHN PATRICK gave his experiences of the iodine method of sterilising the skin of the operating area. In the wards of the Royal Infirmary he had used it in about thirty cases of various kinds during last summer, the results having been uniformly excellent. No stitch abscesses developed, nor did he find toughening of the skin a drawback. He used a 3 per cent solution in rectified spirits. Notes of illustrative cases were given.

Dr. Patrick also read notes on exostosis of the os calcis, which we hope to publish as an original article in a future issue of the *Journal*.

3. DR. JAMES DUNLOP demonstrated a method of reducing recent dislocation of the shoulder-joint, and read notes on an illustrative case.

REVIEWS.

"606" in *Theory and Practice*. By Geheimrat Professor Dr. PAUL EHRLICH and J. E. R. M'DONAGH, F.R.C.S. London: Henry Frowde and Hodder & Stoughton. 1911.

THE first portion of this volume deals with "606" in theory, and begins at the commencement of the matter. Professor Ehrlich tells us how his attention was led, when a student, to a consideration of the distribution of drugs in the body, and how they acted injuriously on living cells. From this he strove to find drugs which would have a destructive action on organisms without injuring the cells of the host. He was led to arsenic by excluding the other two groups (dye) of parasitocides, which had a powerful organotropic action, and so began to experiment with arsenical compounds in the search for the ideal "therapia magna sterilisans," till his experiments culminated in "606." Experiments were undertaken to estimate the toxicity, in various animals, of this new substance on which future experimental work was to be done. From these it was seen that the toxicity of "606" is much less than that of other arsenic synthetic products. Most of the experiments were carried out on animals which had been infected with trypanosomes; but when it was found that rabbits could be inoculated with syphilis, similar experiments were undertaken on them, and proved the effect of the drug on *spirochaete pallida*. In this connection it is important that sufficient dose be employed, otherwise recurrences may take place.

It was expected, after experience of amaurosis following the use of atoxyl and arsacetin, that salvarsan—to give the drug its name—might cause similar serious results, but this fear has been shown to be groundless. The authors recommend that when a patient has been previously treated vigorously with other arsenic compounds, or shown any visceral disturbances after injection, he should not be given salvarsan. On the other hand, iritis and iridocyclitis in the secondary period of syphilis completely disappeared under the use of this drug. As regards fatal cases, patients with disease of the heart and great vessels, nephritis, and diabetes are not good subjects for salvarsan. Jaundice complicating

syphilis demands great care, and aged and very emaciated individuals do not bear the drug well.

The clinical use and methods of administration of salvarsan are fully explained, and the advantages of the intravenous over the intramuscular injection are set forth. Amongst other considerations, it is mentioned that toxicity of arsenic synthetic compounds is not due to arsenic or aniline, but to the phenyl-arsenious acid molecule, and this molecule could not be demonstrated in experiments undertaken to ascertain if it was developed after injection of salvarsan. As regards the practical use of the drug, McDonagh has had good results in the primary stage, and he is convinced that the "therapia magna sterilisans" effect is obtained, because several of his cases have since developed a second attack of syphilis. He reports also rapid results in the secondary stage; but while good results have also been obtained in the tertiary stage, gummata exceptionally do not respond. The explanation of this depends probably on the presence of fibrous tissue and of secondary infection. Nevertheless, the scar left after salvarsan treatment is much more supple and non-adherent than would be expected, and in this way contraction in the neighbourhood of joints is avoided. In this chapter clinical records of many cases of different tertiary lesions are given, and the rapid improvement under the use of salvarsan seems marvellous. In tabes there are no guides as to prognosis, and "an injection should never be strongly urged." The possibility also of aggravation of the symptoms should be mentioned to the patient. In all nervous cases give at first only half a dose, and watch the result. In general paralysis, when dementia has once set in, injection is of no avail, and is dangerous: but in the early stages, when symptoms only suggest the diagnosis, improvement is often remarkable. The results in gummatous meningitis have also been remarkable, but a fatal issue in one of the authors' cases, following on a second injection, must be kept in mind.

In congenital syphilis there are several points of difference from the acquired disease. Thus, there is great risk of death when an infant, presenting syphilitic manifestations, is injected with salvarsan. On the other hand, injection of the mother, while suckling such an infant, causes the lesions to heal, presumably by conveyance of antitoxin, which results from the death of the mother's spirochaetes, and which is conveyed to the child through her milk. It always becomes necessary later to give the child an intramuscular injection. The action of salvarsan in congenital nervous

diseases still remains to be seen; but with regard to interstitial keratitis, it is found that the condition is "very unfavourably influenced." This is presumably due to biological and chemical peculiarities in the spirochæte in the child's cornea.

In concluding this work, the authors remind us that "at this early stage general impressions are more to be relied upon than figures." Keeping in mind all possible limitations, the authors consider that salvarsan "is the greatest specific for syphilis we have." While we cannot yet foretell late results, we know that the lesions are healed in shorter space of time than by mercury, thereby diminishing the risk of infection by syphilitic subjects. Cases also are accumulating where re-infection proves the fact of a cure having been obtained.

From the above notes on the contents of this volume, it may be seen that it gives a pretty complete account of the new drug, and we confidently recommend it to the notice of our readers.

The Treatment of Syphilis with Salvarsan. By Sanitätsrat Dr. WILHELM WECHSELMANN, of Berlin. With an introduction by Professor Dr. PAUL EHRLICH, of Frankfurt-on-Main. Only Authorised Translation, by ABR. L. WOLBARST, M.D., of New York. With 15 Textual Figures and 16 Coloured Illustrations. London: Rebman, Limited. 1911.

THE volume which we are now about to consider is the work of Dr. Wechselmann, of Berlin, who was invited by Ehrlich, in February, 1910, to use the new remedy in his clinique at the Rudolph Virchow Hospital, and is based on a study of 1,400 cases treated with salvarsan.

Professor Ehrlich states in the "foreword" that the author was the first to point out the excellent effect of salvarsan, particularly in those cases of malignant syphilis where the former methods of treatment often failed after years of medication; and he thinks that Wechselmann's explanation of local recurrence after treatment with salvarsan is very plausible. Wechselmann's theory is that the recurrence depends on a spirochætal focus which escapes the attack of the remedy on account of an imperfect vascular supply, and this explains the recurrence in nerve trunks, as salvarsan has no neurotropic action. He refers also to Wechselmann's painless method of neutral suspension, which, while not so good as

the newer method of intravenous injection, deserves great credit, as at the time of its introduction it removed a great obstacle to the practical testing of the remedy.

In the introduction the author describes how Ehrlich, after studying biologically the curative processes in experimentally induced diseases, came to demonstrate the condition termed by him "tropism," and how, aiming at a synthetic remedy possessed of the minimum of organotropism and the maximum of parasitotropism, he ultimately produced the substance known as "606," or "salvarsan."

The author then gives his personal experiences in 1,400 cases, which included all types of syphilitic lesion. Arising from his study of the action of the drug in these cases, we have sections on complications, necrosis, exanthemata, contra-indications, &c. The effect of the injection on the Wassermann reaction is interesting. In some tertiary cases a negative reaction became positive, due to mobilisation of spirochætal poison when the spirochætes have been destroyed by the drug.

The other effects of salvarsan which are mentioned are improvement in general health, and the stimulation of epithelization even in non-syphilitic diseases of the skin.

There is a very full review of the literature, and the experiences of different observers are tabulated.

As regards the effect of salvarsan on the spirochætes, all of the latter are not always destroyed. The remedy is unable to reach encapsuled foci until the connective-tissue wall around the spirochætes has been sufficiently vascularised. Mercury, by assisting in the absorption of the tissue, is thus an admirable precursor to the use of salvarsan, and in cases so treated recurrence after salvarsan is very rare (p. 147).

Although Wassermann's reaction is a great aid, Wechselmann thinks that "we do not yet possess a safe criterion for determining when syphilis is absolutely cured. . . . Speaking generally, however, when a syphilitic does not exhibit any symptoms for a period of two years, and with control tests made every three or four months shows a repeatedly negative Wassermann's reaction, the disease may be considered cured." The author concludes that while we are only at the beginning of our knowledge of the new treatment, we may hope to cure syphilis, or, at least, greatly to limit its ravages, and also to prevent the development of paralysis or tabes.

In addition to the bibliography given in the review of literature, there is in this English edition a list of references to American and British literature.

There are 16 coloured plates at the end of the volume. These are of great value, as they show the lesions before and after treatment, and in the latter instance the time elapsed after injection is indicated.

The volume is written in a style familiar to readers of German medical literature. Whenever a statement is made calling for corroboration, such is supplied by clinical instances. There is abundant and detailed reference to the published work of others, and the book may fairly claim to be an exhaustive account of the curative effect of salvarsan in syphilis. In addition to the table of contents there is an excellent index.

As was foreshadowed in the "foreword," the reader will find that the author favours the intramuscular method of injection; but from the work of a majority of recent observers it would appear that the intravenous method will replace it. Nevertheless, Dr. Wechselmann deserves credit for demonstrating so thoroughly what the remedy is capable of.

The translation is good, and thanks are due to all concerned in the production of a volume which will well repay perusal.

Manual of Clinical Pathology for the General Medical Practitioner, comprising the Examination of Urine, Stomach Contents, Fæces, Blood, and the Serum Diagnosis of Syphilis, Tuberculosis, Typhoid Fever, &c. By RICHARD WEISS, M.A., Ph.D., F.C.S., in collaboration with GEORGE HERSCHELL, M.D.Lond., and ANDREW CHARLES, F.R.C.S.I. London: J. & A. Churchill. 1910.

THE first edition of this work appeared in 1908 under the title of *Newer Methods for the Qualitative and Quantitative Analysis of Urine and Gastric Juice*, and appears to have had a very favourable reception. Its purpose was to provide the general practitioner with simple means by which examinations of the urine and gastric juice could be carried out in the consulting room accurately, rapidly, and cheaply. The present edition is more ambitious in its scope, as may be inferred from its new title, and in spite of its small size contains a surprising amount of material. Dr. Herschell has contributed the sections on the gastric juice and the fæces, while Mr. Charles has revised the chapter on the urine. When one bears in mind the time and trouble and expensive apparatus which are required for examinations as usually

carried out at the present day in a clinical laboratory, and the methods which students are still taught to use, it seems almost a revolution to introduce the many procedures with which this book deals into the routine work of the general practitioner's consulting room.

We strongly recommend this little manual to the notice of all medical men. It costs only two shillings.

The Mother Books, I. Children: A Märchen. By HUGO SALUS. Translated and published by A. C. Caton, 22 Mount Carmel Chambers, Kensington, London, W. 1910.

THIS little romance, *Wo kommen die Kinder her?* was written by an Austrian doctor, and the translator's attention was drawn to it by a young German mother. It is intended to supply an answer to the little ones who are old enough to be inquisitive as to their origin, and who will not be satisfied with a single sentence—and that an untruth—in reply. This booklet will doubtless appeal to a certain proportion of parents, but it will not deliver them from all their difficulties—certainly not from the difficulty of keeping to literal truth in matters of this kind. At the same time we can recommend it as well-intentioned and clean.

Official Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Twenty-Seventh Annual Issue. London: Charles Griffin & Co., Limited. 1910.

THIS book gives details of the work done in almost all the scientific and learned societies of these islands during the session 1909-10. The societies are grouped according to the branch of science they deal with, *e.g.*, science generally; astronomy, mathematics, physics; chemistry and photography; medicine, &c. Further, they are divided into those in London, in the country, in Scotland, and in Ireland. Details of office-bearers' names, address of place of meeting, subscriptions, &c., are given, as well as the list of contributions for the year.

This should be a very useful book of reference, and save much trouble in finding title, date, and author of contributions to any of the included societies, as well as details as to the names of their officers, &c.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE A. ALLAN, M.B., CH.B.

M E D I C I N E.

The Leucocytes in the Diagnosis, Classification and Prognosis of Pulmonary Tuberculosis. By J. F. Hultgen, M.D. (*Illinois Medical Journal*, February, 1911).—The author comments on the fact that though the tuberculin tests are valuable for early diagnosis they furnish little evidence as to the extent of the lesion, while the usual methods of physical examination are of little help in either connection. He believes that repeated combined clinical and hæmatologic examinations are essential for the diagnosis of the extent of the lesions in pulmonary tuberculosis on the ground that by repeated total and differential leucocyte counts one can measure the degree of biologic and lymphatic tissue resistance to the invading germ or germs.

He then proceeds to discuss his method of interpreting a "leucocyte picture."

1. Bacteriologists and anatomo-pathologists have so swayed medical opinion these last few decades that the morbid agents have been considered alone to the exclusion of the host. Invasion by germs became synonymous with infections, and tissue reactions were attributed only to the invading toxin or infectious agents.

2. Over and over again one loses sight of the fact that (a) the red blood cells serve for respiration only. Both pulmonary and cellular exchanges of gases are transmitted through their agency; they are but little involved in infections. (b) That the leucocytes subserve nutrition and immunity.

3. It must be accepted as a fact that all leucocytes develop from one mother cell, the lymphagon or lymphoid cell. The various forms of leucocytes encountered normally in the blood-stream represent the same cell only under different forms, which are nothing but the four to five different stages of its life cycle, the polymorphonuclear cell being genealogically the oldest white blood cell.

4. It can be rationally assumed that the function of a white blood cell changes with its form, respectively with its stages of development. He believes the mononuclears serve for slow deliberate phagocytic defence and digestion of noxa, while the polynuclears serve mainly as chemical, or immediate, or specific defensive agents. The rôle played by the eosinophilic polynuclears in immunity is a very important one, but still far from being clear. The basophilic cells are a form of immature atavistic large mononuclears without any particular function.

5. The leucocytic granules, brought into such prominence by Paul Ehrlich that they have been given his name, have been exalted beyond their proper biologic importance. These histo-chemical observations, though very ingenious and even brilliant, have very materially encumbered the progress of leucocytology, and by a technic with fantastic blood stains have changed hæmatology from a biologic study into one of experimental and speculative chemistry. The function of leucocytes is certainly not alone the production of granules, but also nutrition and defence of the cells.

6. It is also quite rational to assume that an increase in the total number of leucocytes, or an alteration in the proportion of these cells correspond to a change in the body fluids in which the mesoblastic tissue cells are bathing. That this response to a toxic or a toxic-infectious agent should manifest itself in a variation of the number and proportion of white blood cells is the most logical thing one could expect.

7. A leucocytosis means the increased production of leucocytes in the leucogenetic or leucopoietic tissues, and the pouring of them into the blood-stream.

8. A polynucleosis, which is usually associated with a leucocytosis, is an expression of an agency which enormously hastens the maturation of mononuclears into polynuclear leucocytes. This excessive production of polymorphonuclears is necessary for the rapid neutralisation of toxins, a condition met with in most of the acute intoxications or acute infections.

9. The eosinophiles disappear in acute infections and reappear with the advent of antibodies. Their function seems to be the storing and protection of ferments necessary for immunity mainly. Their granules contain the principal ingredients for antibody formation.

10. The method of interpretation of a leucocyte picture is of real value in the diagnosis of the various infections, acute or chronic.

The leucocytes do not react in a specific manner to any single infective germ or any one single toxin, but they do react in a quasi-characteristic fashion to certain groups of germs and to certain groups of toxins. Thus, the reactions toward the pyogenic infections differ from those of the typhoid or colon bacillus group, and they react in a peculiar manner towards the tubercle bacillus or its poisons. Indeed, the leucocytology of tuberculosis is based on this very fact. The white blood picture of tuberculosis corresponds exactly to the cellular changes in tubercular tissue. It is only natural that the blood as a fluid tissue should behave towards irritants like any other mesoblastic derivative. Viewed from this biological standpoint, the use of the leucocytic picture obtains the significance of a biopsy, and assumes a positive diagnostic and prognostic value. Inflammatory changes in the leucocyte picture correspond exactly to the histologic alterations in the same conditions. Acute infections will differ in their effects on the white blood from those of a chronic nature.

Any cell when irritated tends to assume again embryonal characters in the way of form, histo-chemical reactions, nuclear and protoplasmic changes, &c. The leucocytes make no exception to this general law of biology. Thus, during the first, or incipient, or lymphangitic stage of pulmonary tuberculosis the leucocytic picture tends to, and does return towards, the infantile white blood picture, with a predominance of mononuclears, a leucopenia, a slightly increased eosinophile percentage, greatly lessened neutrophile, and a normal red blood count. This explains the first stage of pulmonary tuberculosis. It is what many authors call the pretuberculous, or the stage of chloramia. When tuberculosis becomes clinically manifest to the average physician, it has already passed the first stage and entered the second, or at times even the third stage. When the first stage of pulmonary tuberculosis, which is identical with the infiltrative lymphoid, lymphangitic stage of anatomopathologists (Petruschy), has passed, a second stage of tissue changes occurs in the form of cheesy foci or caseous transformation of the lymphoid tubercles. This has its leucocytic parallel in the appearance in the blood picture of the signs of intoxication and irritation—more polynuclear elements less mononuclears, instead of a leucopenia, a small or relative leucocytosis, and lessened eosinophiles. Clinically, night sweats, hemorrhages from the lungs, greater frequency of "colds," which are very likely nothing else than the intermittent outbreaks of anaphylaxis, in which external influences, such as cold, may play a subordinate, though ill-definable, rôle. We have here the leucocytic counterpart of distinct secondary anatomic or tissue changes. The third stage has less to do with the tubercle bacillus than either of the first two stages. The third leucocytic stage corresponds to cellular tissue changes in

chronic pyogenic infection, added to existing infective granuloma. It is essentially a pus infection, and should be surgically treated by opening and drainage.

TABLE OF LEUCOCYTES IN HEALTH AND IN PULMONARY TUBERCULOSIS.

	Poly-nuclears. Per cent.	Small Mono-nuclears. Per cent.	Large Mono-nuclears. Per cent.	Eosino- philes. Per cent.	Total. Per c.mm.
Children (35 cases), . . .	47.0	46.5	3.5	3.0	6,000
Adults (25 cases), . . .	64.2	29.4	4.2	2.2	7,600
Pulmonary tuberculosis—					
Stage 1 (130 cases), . . .	53.5	39.0	4.5	3.0	4,600-7,000
Stage 2 (30 cases), . . .	67.0	25.5	5.5	2.5	8,000-10,000
Stage 2 (160 cases), . . .	79.6	14.5	4.7	1.2	9,000-16,000
Acute pyogenic diseases (72 cases),	86.0	8.5	5.0	3.0	12,000-50,000

Notice large percentage of small mononuclears in childhood and in incipient pulmonary tuberculosis.

Conclusions.—1. Five or six successive double white blood counts taken at intervals of at least two to three days will supply the leucocytic picture of a case of pulmonary tuberculosis.

2. No diagnosis of tuberculosis is complete without this blood picture.

3. For prognosis this blood picture is essential.

4. A return towards the infantile blood type is a good prognostic sign, while a decline towards the acute pyogenic disease blood type is of unfavourable omen.

5. The fairly constant maintenance of a certain level is one of the most striking characteristics of these blood pictures.

6. Incipient tuberculosis of the lungs is anatomically represented by a small cell infiltration, a lymphoid or lymphangitic process, which shows itself in a parallel infantile blood picture.

7. The second stage of lung tuberculosis is constituted by tubercles which caseate in the course of their development. Thereby they produce the second clinical, or tuberculo-toxic, stage, which is characterised by a blood picture of toxæmia.

8. The third stage corresponds anatomically to cavity formation, together with a mixed infection, or to a caseous tuberculous pneumonia. The leucocyte picture of this stage combines the attributes of a chronic streptothrix or granulomatous infection with that of a pyogenic germ invasion. The sapremic and pyæmic processes outweigh the lymphangitic and caseous changes.

9. Five years' work among tuberculous patients justifies the conclusion that tuberculin is indicated mainly in the first stage, and most useful therein; that in the second or toxic stage it is difficult and hazardous to administer tuberculin in any of its forms, partly because of the hypersusceptibility of these patients, and partly because these patients are being auto-inoculated by tuberculin-like substances. I have never seen positive and lasting results from the use of tuberculin in the third stage of tuberculosis. It is useless in this stage, and probably dangerous.—D. ROSS KILPATRICK.

Paramyoclonus Multiplex. By Professor Collet (*Lyon Medical*, 13th November, 1910).—M. J. Delachanal described for Professor Collet a case in a girl of 14 years admitted to the "Charity" having clonic, symmetrical, and involuntary convulsions in the upper extremities.

Report of the case.—Rosalie B., æt. 14 years, breadcarrier, was admitted on 14th January, 1910, to the "St. Jeanne" ward, complaining of convulsions limited to certain muscles of both upper extremities. There is no hereditary taint. Her birth was normal and she was breast-fed. Beyond measles and varicella she has always been healthy. Nine or ten years ago she exhibited

spasmodic movements of the head (rotation towards the right and left). These movements occurred rapidly once or twice, and sometimes she threw her head backwards. These attacks lasted less than five minutes. This condition lasted about three months. Shortly afterwards she showed convulsive contractions of the face and neck muscles, which also disappeared after some months. For the last eighteen months she has been a message-girl in a baker's shop, and the work, although hard, did not seem to over-fatigue her. She menstruated first in May, 1909, and irregularly since. Beyond headache from time to time, she remained well. Her trouble started three months ago in the right arm, passing afterwards to the left. The lower extremities were unaffected. The patient was in the habit of carrying the message-basket on the right arm.

On admission it was seen that there was clonic spasm of certain muscles of the upper extremities, namely, the biceps, brachialis anticus, triceps, and supinator longus. The contractions were most marked in the right biceps and long supinator. The shoulder muscles were never involved. A few of the neck muscles were affected on admission, but not at a later date. The spasms were sharp, like those produced by an electric current. They did not occur synchronously in the two arms, or even in the same muscles. At times the biceps alone contracted, while at others it was the supinator longus or triceps. The attacks were arrhythmic and more or less severe. When the spasms were very severe all the involved muscles contracted at the same time. The muscle tremors, even when greatest, did not cause movements. The number and force of the spasms seemed to be augmented by mechanical stimuli, such as pressing the muscles. They disappeared during sleep. They did not disappear completely during voluntary movements, but did not impede these movements. Volition seemed to inhibit the spasm. Lastly, there was no atrophy of the arms, and the shape of the limbs was exactly the same as on admission. Hysterical stigmata, anaesthesia, hyperaesthesia, hysterogenic zones, abnormality of corneal reflex, pharyngeal reflex, diminution of the field of vision, and nystagmus were all absent. The patellar, radial, and olecranon reflexes were normal. Babinski's sign was absent. All organs were normal. The patient was robust, the digestion good, although the tongue was slightly dirty. Temperature was normal.

Briefly, here is a patient of 14 years, who is the subject of convulsions, clonic, sharp, involuntary, without displacements, insidious in onset, occurring at close but unequal intervals, affecting bilateral muscles, but not synchronously, and having no sensory, vasomotor, secretory, or psychical disturbance.

It is evidently a myoclonus, closely resembling the definition given by Vanlair (*Revue de Médecine*, 1889). The myoclonic syndrome is characterised by contractions, forcible, sharp, inco-ordinate, in rapid succession, rhythmic and arrhythmic, abortive, or followed by distinct displacements, affecting the same parts, and resulting in an alteration between the action and relation of the same muscles.

This definition, however, is too wide, as it comprises all the false choreas—those of Dubini, of Bergeron, and the variety of tics which show a special morbid type. This definition also embraces the paramyoclonus multiplex of Friedreich and the myoclonus stasique of Vanlair (*i.e.*, without displacement of a limb or segment of a limb). In this case we are able to eliminate “tics,” for in these the face is usually involved. The muscular contraction is generally more regular in the same muscles; it causes movements of a pseudo-intentional character. It is perhaps produced by artificial stimuli. They have rhythmic characters, coming on in fits. They embrace voluntary movement. Here, on the other hand, we have clonic spasms, which cause no movements. They are arrhythmic, with a certain regular tendency, and do not disturb regular movement. They are increased by mechanical stimuli. They have no intentional character. The affected muscles do not contract simultaneously, except in the violent fits. The face is not involved. There are no psychic troubles. The spasms are sharp and electrical. They are

bilateral and symmetrical, at least alternately. These are the characters of Friedreich's myoclonus. The term "para" has been used by Friedreich to denote the bilateral character of the affection. Extension to the lower limbs is not emphasised.

This is the classification into which the case must go. The etiology of myoclonus is obscure. This disease, which in Friedreich's classification is found in the adult, seems to be a syndrome rather than a definite disease, and is of various origin. In the antecedents of the patients one finds various organic nervous system diseases, such as general paralysis, hysteria, and epilepsy. It is a serious illness, with convulsive crises, embracing all the muscles of the body, occurring even during the night, but is much more curable than Bruns shows to be the case in children.

It seems that in this case a definite nerve lesion ought to play a part. The patient shows no psychic troubles, no nervous heredity, no hysteria; she has had no "tics," which are so characteristic. The fact that the convulsions are mainly in the right arm, which constantly carried the basket, seems to show an intentional etiology related to the "tics," showing the relationship between this class of disease and paramyoclonus.—D. ROSS KILPATRICK.

DISEASES OF THE EYE.

Researches on Retinal Adaptation of Miners and on their Nystagmus. By Dr. Weekers, Liege (*Archives d'Ophthalmologie*, T. 30, No. 12, December, 1910, p. 743).—In an interesting and suggestive paper, the subject of which is indicated in the title given above, Weekers shows that a considerable amount of information is to be gained by the investigation of the power and qualities of adaptation which the retina possesses. He has worked with a modification of the light-sense test-box devised long ago by Förster, and has, by this means, been able to show that the retina of an individual who has passed from a fully illumined to a totally dark room undergoes changes which result in increase of sensitivity from unity to as much as one hundred and twenty thousand times. This seems to be rather a large amount, it is true, but it is calculated by the diameter of opening of an illumined disc and the absorbing power of screens which are interposed between the source of light and the screen at which the patient is directed to look.

It has been shown that, contrary to the general opinion, the retinal adaptation undergoes only a very small amount of change in the first ten minutes of stay in a dark room, and that thereafter the change is rapid. The sensitivity of the retina increases regularly and steadily until forty or fifty minutes have been spent in the dark room when it is at its maximum.

Weekers calls attention to the fact that the adaptation of each eye alone is less than that of the two eyes together. He then, at a later stage, shows that after the loss of an eye the light adaptation of the remaining eye is distinctly less than it should be. This is a very important fact from the medico-legal standpoint.

The author then passes on to show that in nystagmic miners there are several different faults of adaptation, found usually in different individuals, but sometimes in the same. Thus the curve, plotted out on a graph, may show slowing of rise, the real rapid ascent not beginning till the man has been in the dark room for as much as twenty minutes. Again, the rise may begin at the usual time, but may stop too soon, as after forty minutes; or it may not rise as far as usual; or it may rise in an irregular manner, going up and then falling back a little, and so on.

Weekers has not been able to find any proportion between the amplitude of the nystagmic oscillations and the defect of adaptation. It is in miners who are suffering from nystagmus, and who at the same time are complaining of other symptoms, that the adaptation is most defective. This defect of

adaptation, according to the author, constitutes a true hemeralopia, and should be recognised as such, as the miners so affected have usually perfect vision in full daylight.

Regarding the pathogenesis of the condition, the writer suggests that perhaps changes in the length of the rods and cones, or alterations of the visual purple, may account for the defect. As albinotic persons ordinarily have good adaptation, the retinal pigment cannot be at fault. It seems that the rapid and frequent change from light to darkness and *vice versa* cannot be the cause of any change in the visual purple, as the vast majority of miners have quite good adaptation. An important point is brought out in this relationship, namely, that miners on the day-shift are more liable to be affected by nystagmus than those on the night-shift. The proportion is about two of the former to one of the latter.

It is a deduction from this that something might be done to prevent the occurrence of nystagmus by graduating the rapidity of the change from full daylight to darkness, and from the darkness of the mine to full daylight.

The whole paper is of great interest, and should be read by anyone who has to do with miners and their diseases.—LESLIE BUCHANAN.

Conclusions on our Enquiry regarding Serotherapy in Ocular Infections. By Dr. A. Darier (*La Clinique Ophthalmologique*, 10th December, 1910).—Darier is careful to premise the statement that this form of treatment is not absolutely efficacious in all cases, whatever good results follow its use in a large percentage of cases.

An important point is brought out, namely, that the sera can be administered by the mouth as well as by the use of a syringe. The writer has formed the impression that immunising or active sera, when administered by the mouth, have not a bactericidal or an antitoxic action, but a stimulating action on the organic defences. Thus the specific serotherapy neutralises the poison of an infection, and the paraspecific serotherapy stimulates the tissues to a higher resisting power, and the two should go together. In a case of diphtheria, for instance, Roux's serum should be injected first, and then, at a later stage, be given by the mouth. Darier says that "it results from our enquiries that whether one uses the serum of Roux-Behring, or the antitetanic serum, or Rosenthal's antirheumatismal serum, or Deutschmann's serum, the clinical results will be the same."

In serious infections of the vitreous body, or in corneal affections, the results of paraspecific serotherapy are least satisfactory; whilst in iritis, iridocyclitis and phlegmon of the lachrymal sac the results are best.

The results of treatment in different conditions, such as pseudo-diphtheritic conjunctivitis, granular conjunctivitis, corneal lesions, keratitis, iritis, iridocyclitis, traumatic infections, and other conditions, are recounted in more or less detail, and show that, except in corneal ulcers, there is much to be hoped for from carefully administered serum treatment.

In concluding, the writer says that it has been seen that the results of paraspecific treatment are as good as those of specific treatment, and he holds that whilst vaccine treatment may give better results than either, the loss of time in getting the vaccine prepared will often be considerable. He recommends that whilst waiting for the vaccine, it would be well to give one or two doses of the paraspecific treatment, which will, at all events, assist in the result to be brought about.

A prescription is given for the use by the mouth of the antidiphtheritic serum, as follows:—

Serum antidiphth. (Pasteur Instit.),	. . . . .	10 c.c.
Syrup, . . . . .	. . . . .	20 gram.
Water, . . . . .	. . . . .	90 „

Give a tablespoonful every hour till improvement shows, and then every two hours. (In this way as much as ten capsules of the serum can be taken without inconvenience.)—LESLIE BUCHANAN.

PATHOLOGY.

Meningococcal Meningitis and Cerebral Abscess. By MM. Monziols and Loiseleur (*Gazette des Hôpitaux*, 24th November, 1910).—The authors record the case of a young soldier who came under observation on 18th January, 1910, complaining of severe headache and vomiting of sudden onset. His previous health had been good, although latterly his comrades had noticed that he was getting dull and morose. After his admission to hospital, on 21st January, he had an epileptiform seizure, with loss of consciousness, stertorous breathing, and clonic movements of the limbs. Lumbar puncture was performed next day, and some clear watery fluid, apparently under normal pressure, withdrawn. There was no cellular deposit, but cultivation on ascites-agar yielded a growth of Gram-negative bean-shaped cocci. On 23rd January the headache was more severe, while Kernig's sign and rigidity of the neck were present. A spinal puncture now yielded muddy fluid, and in the centrifuged sediment an organism having the characters of Weichselbaum's meningococcus was found. For two days thereafter the cerebro-spinal fluid remained muddy, and meningococci were present in abundance. On 24th January serum treatment was commenced, and continued daily until the 27th. On the 26th clear fluid was again obtained, in which only a few organisms were found. The cytological picture, moreover, which formerly showed a great excess of polymorphonuclears, was now mainly lymphocytic. In spite of the apparent improvement thus manifested, the patient's condition became gradually worse. On 29th January he became comatose, and death occurred on 5th February.

At the autopsy a large cerebral abscess was found, the pus from which contained numerous meningococci. As there were no localising symptoms, this abscess was unsuspected during life, and its presence fully accounts for the discrepancy between the laboratory findings and the clinical course of the disease.

In the opinion of the authors, this patient had first of all a blood infection, with secondary cerebral localisation, and subsequent invasion of the meninges. Contrary to Flexner's view, they believe that in the great majority of cases the meninges are infected *via* the blood-stream, and not directly from the nose; and in their experience even benign cases of the disease yield 90 per cent of positive blood-cultures. Serum-therapy is strongly recommended—by combined subcutaneous and intraspinal injection in certain cases, but by the intravenous method where there is no fear of anaphylaxis.

—MATTHEW J. STEWART.

Two Cases of Epidemic Cerebro-spinal Meningitis, showing Meningococcal Arthritis and Fatal Serum Anaphylaxis. By M. Vigot (*Gazette des Hôpitaux*, 20th December, 1910).—The first case was that of a young man of 18 years, who took ill on 26th January, 1910, and who soon presented the classical phenomena of acute meningitis. The diagnosis was fully established by the discovery of the meningococcus in the cerebro-spinal fluid. Lumbar puncture was performed on 27th, 28th, 29th, and 30th January, and followed on each occasion by the intraspinal injection of Dopter's serum, the dose varying from 20 to 30 c.c. On 1st February a rapid effusion into both knees occurred, with intense swelling and fluctuation, and considerable limitation of movement. On 3rd February the knees were explored, and 80 and 60 c.c. of purulent fluid removed from the left and right joints respectively; 20 c.c. of serum were then injected into each. The arthritic exudate contained numerous polymorphonuclears and meningococci. On 4th February the right knee was much better, but the left remained tender, while a dry arthritis of the left shoulder had made its appearance.

The left knee was again explored on 5th February, when 40 c.c. of purulent fluid were removed and 10 c.c. serum injected. The right knee had quite recovered by 9th February, the left two days later. The patient ultimately made a complete recovery, except that he remained deaf in the left ear.

The second case was that of the above patient's mother, who took ill on 8th February, 1910, and was clearly infected from her son. The symptoms were not clearly meningeal until 14th February, on which date lumbar puncture was performed, and 20 c.c. of Dopter's serum injected. In the fluid removed numerous polymorphonuclears and a few meningococci were found. On the three following days there was great amelioration of symptoms, but a recrudescence took place on the evening of the 19th. Next day a second lumbar puncture was performed, and 30 c.c. of serum injected. This procedure was again repeated on 21st February, and was immediately followed by striking improvement. The symptoms recurring on 26th February, lumbar puncture was performed for the fourth time, and 40 c.c. of serum injected. Almost immediately the patient became comatose, and death occurred thirty-six hours later.

The articular manifestations of epidemic cerebro-spinal meningitis are to be divided into two classes—arthralgic and suppurative. In the former the arthritis is slight and fleeting. It may involve one or several joints, and usually appears within the first week, but in some cases the arthralgia precedes the meningitis. The joints usually involved are the shoulder, elbow, knee, and wrists, as well as the intravertebral articulations. In the suppurative form one joint only is usually involved, especially the knee, shoulder, and elbow, but occasionally many joints are implicated. They may recover completely without local treatment, but they are very favourably influenced by the injection of anti-meningococcic serum in doses of 10 to 30 c.c.

In 220 cases of cerebro-spinal fever, collected by the author from various sources, meningococcal arthritis occurred 13 times. The condition is to be differentiated from serum arthropathy, which rarely appears before the eighth day following the injection, and is usually accompanied by urticaria and other manifestations.

With regard to the second case, the author believes that the coma and fatal termination are to be attributed to anaphylaxis. He, therefore, recommends that in these cases, as soon as the diagnosis is established, a series of four injections of 30 to 60 c.c. of serum should be given on successive days, and an attempt thus made to strangle the disease before the patient has become anaphylactic. After that, if there is a return of symptoms, one must be guided by the condition of the cerebro-spinal fluid, and, on the whole, the author would be inclined to temporise. Four similar cases, three of them fatal, are quoted from the literature.—MATTHEW J. STEWART.

PUBLIC HEALTH AND INFECTIOUS DISEASES.

Reports on Plague Investigations in India. By the Advisory Committee of the Plague Commission (*Journal of Hygiene*, vol. x, No. 3, Fifth Extra Plague Number).—The present publication is in direct continuity with the reports published in Vol. VIII of the *Journal of Hygiene*, and contains Sections XXXIII to XXXIX.

Section XXXIII is the third communication on the experimental production of plague epidemics in animals. In this series of twelve experiments elaborate precautions were taken to exclude rat fleas from certain of the "go-downs" where healthy rats and plague-inoculated rats were kept in close proximity. In those go-downs which were flea infected, the average number of fleas per rat was determined. The rats which died were submitted to examination *post-mortem*. By these measures it was clearly demonstrated

that, wherever the rat flea could be excluded absolutely, no infection was conveyed from plague-stricken rats to healthy; and that the liability to infection increased proportionately with flea infestation. No evidence was gathered that rats were infected by eating their dead.

Section XXXIV deals with *resolving plague* in rats, formerly known as chronic plague. There is a visceral and a peripheral form of this type of plague, the former manifested chiefly in the spleen, the latter in the superficial lymphatic glands. In both there is an absence of toxic symptoms, the lesions are abscesses or necrotic areas definitely localised, and bacilli, if found at all, are confined to these. All stages occur, from lesions verging on the acute to such as are merely vestiges of past disease. This type of plague is most common toward the end of epidemics of acute plague, presumably an infection of the more immune rats. It is not a chronic disease; the significance of such lesions is better expressed by the term *resolving plague*.

Section XXXV is an examination of data collected and arranged by the late Major Lamb in relation to the spread of epidemic plague through the scattered villages of certain districts. These were Rohtak and Amritsar in the Punjab, and Mozuffarnagar in the United Provinces. The centres of plague mortality were recorded graphically on maps for each month of successive epidemics, the Rohtak series being reproduced. They trace the spread from foci established early in epidemics, varying, as a rule, widely from year to year. The previous plague history of villages affected in each single epidemic was studied, and in regard to places reporting the earliest cases, their relation to the epidemic just preceding. The conclusion is that most villages have too long a respite from plague to admit of recrudescence as an explanation of fresh outbreaks. Villages infected late in an epidemic were rarely found to have notified deaths early in the next. It was also clear that the same villages were not constantly affected at any period in the course of succeeding epidemics. All these facts point to importation and not recrudescence as the mode of origin of fresh epidemics. The incidence of infection upon villages is apparently not altogether random; greater size seems to predispose to infestation. These conclusions are, in the main, borne out by a purely statistical examination of the data; but the incidence of plague in Amritsar district appears to be affected by some additional unknown factor.

Sections XXXVI and XXXVII deal with observations on plague in Belgaum and Poona during 1908-1909. These places were chosen because plague epidemics in them are seasonal, though the seasonal factors apparently inimical to plague in other quarters are almost entirely absent. Since the introduction of plague in 1897, epidemics have reached their maximum in the wet season. These investigations revealed that the infestation of rats with rat fleas was greatest in the wet season. Variations in flea prevalence and in atmospheric humidity, plotted on the same chart, exhibit striking correspondence. The conclusion is that sporadic cases of plague in Belgaum tend to cause epidemics only when the relative humidity is high and the conditions favourable for multiplication of fleas.

In Poona the first cases of the 1908-1909 epidemic were clearly imported, and subsequent indigenous cases were not directly associated with them, but occurred, many of them, at a considerable distance. It is suggested that rat fleas are carried by healthy humans, and originate distant epizootics in rats, so determining epidemics. The relation of epidemic, flea prevalence, and atmospheric humidity was again notable. Additional adverse factors to the continuation of an epidemic were seen to be diminution of the rat population and immunity of the survivors.

Section XXXVIII is the first report on investigations into plague vaccines by Sidney Rowland. Previous work by other investigators is recapitulated, and some general remarks follow on the preparation of vaccines. The motive and the claimed result of this research is the preparation of a derived vaccine, approximating to the pure antigen. The product is a nucleo-protein, "substance B," obtained by pounding a paste of washed organisms, killed by chloroform, with anhydrous sulphate of soda, alternately heating and

cooling the mixture, dissolving the sodium sulphate, and filtering off the bacteria. An extract of these in water or saline is "substance B." The results of experiments indicate that it has highly toxic and valuable immunising properties, according to the dose administered. Dosage is accurately estimated by weight. The residue of sulphated bacilli is devoid of antigen.

Section XXXIX is the interim report of the Advisory Committee, and lays stress on—

1. The association of epidemics of bubonic plague with recent rat epizootics.

2. The influence of fleas upon the spread of plague among rats.

3. The evidence that most individual human cases are the result of direct infection from rats by the agency of rat fleas.

4. The occurrence of an epizootic, and a subsequent epidemic, when human agency has introduced the infected rat flea at a season favourable for its multiplication.—RALPH M. F. PICKEN.

Books, Pamphlets, &c., Received.

Care of the Patient, A Book for Nurses, by Alfred T. Hawes, A.M., M.D. With 6 illustrations. Philadelphia: P. Blakiston's Son & Co. 1911. (\$1.00 net.)

"606" in Theory and Practice (Oxford Medical Publications), by Professor Paul Ehrlich and J. E. R. McDonagh, F.R.C.S. London: Henry Frowde and Hodder & Stoughton. 1911. (7s. 6d. net.)

The Treatment of Syphilis with Salvarsan, by Dr. Wilhelm Weichselmann. With an Introduction by Dr. Paul Ehrlich. Only authorized translation, by Abr. L. Wolbarst, M.D. With 15 textual figures and 16 coloured illustrations. London: Rebman, Limited. 1911. (21s. net.)

The Life History, Function and Inflammation of the Appendix, by Edred M. Corner, M.A., M.C., F.R.C.S. London: John Bale, Sons & Danielsson, Limited, 1911.

Transactions of the American Surgical Association. Vol. XXVIII. Philadelphia: W. J. Dornan. 1910.

Verhandlungen der Berliner medizinischen Gesellschaft aus dem Vorstande der Gesellschaft. Band XLI. Berlin: L. Schumacher. 1911.

New and Non-Official Remedies (1911), containing Descriptions of the Articles which have been Accepted by the Council on Pharmacy and Chemistry of the American Medical Association prior to 1st January, 1911. Chicago: American Medical Association. 1911. (50 cents.)

The Chemistry of Synthetic Drugs, by Percy May, B.Sc.Lond. London: Longmans, Green & Co. 1911. (7s. 6d. net.)

Disease in Bone and its Detection by the X-Rays, by Edward W. H. Shenton, M.R.C.S.Eng., L.R.C.P.Lond. With illustrations. London: Macmillan & Co., Limited. 1911. (4s. 6d. net.)

Surgery (Catechism Series). Part II. Second edition, revised and enlarged. With plates. Edinburgh: E. & S. Livingstone. (1s. net.)

What Shall I Eat? A Manual of Rational Feeding, by Dr. F. X. Gouraud; with a Preface by Prof. Armand Gautier. Only authorized translation into the English language, by Francis J. Rebman. With a Glossary, and an Index of Diseases. London: Rebman, Limited. 1911. (6s. net.)

An International System of Ophthalmic Practice, edited by Walter L. Pyle, A.M., M.D.: Therapeutics, by Dr. A. Darier, translated by Sydney Stephenson, M.B., F.R.C.S.Lond. Illustrated. London: Rebman, Limited. 1911. (17s. 6d. net.)

**GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR
THE FOUR WEEKS ENDED 20TH MAY, 1911.**

	WEEK ENDING			
	April 29.	May 6.	May 13.	May 20.
Mean temperature, . . .	47·3°	47·0°	53·8°	53·6°
Mean range of temperature between highest and lowest,	10·1°	15·1°	15·0°	17·7°
Number of days on which rain fell,	7	5	3	2
Amount of rainfall, . . ins.	1·17	0·94	0·28	0·62
Deaths registered, . . .	281	269	275	228
Death-rates,	18·7	17·9	18·3	15·2
Zymotic death-rates, . .	2·7	2·5	2·8	2·3
Pulmonary death-rates, .	5·0	3·9	5·6	6·1
DEATHS—				
Under 1 year,	55	52	55	51
60 years and upwards, .	58	70	54	49
DEATHS FROM—				
Small-pox, . . . . .	...	...	...	...
Measles,	6	7	12	5
Scarlet fever, . . . . .	...	1	6	...
Diphtheria,	4	3	2	...
Whooping-cough, . . .	24	24	27	31
{ Fever,	1	2	1	...
{ Cerebro-spinal fever, .	3	2	...	1
Diarrhoea,	5	6	5	1
Croup and laryngitis, .	...	...	...	...
Bronchitis, pneumonia, and pleurisy,	65	40	35	28
CASES REPORTED—				
Small-pox,	2	...	...	...
Cerebro-spinal meningitis, .	3	3	2	2
Diphtheria and membranous croup,	31	29	24	22
Erysipelas,	27	21	11	17
Scarlet fever,	43	45	56	54
Typhus fever,	1	...	...	...
Enteric fever,	6	7	5	5
Phthisis,	56	48	50	64
Puerperal fever, . . .	3	1	1	3
Measles,*	228	171	212	202

* Measles not notifiable.

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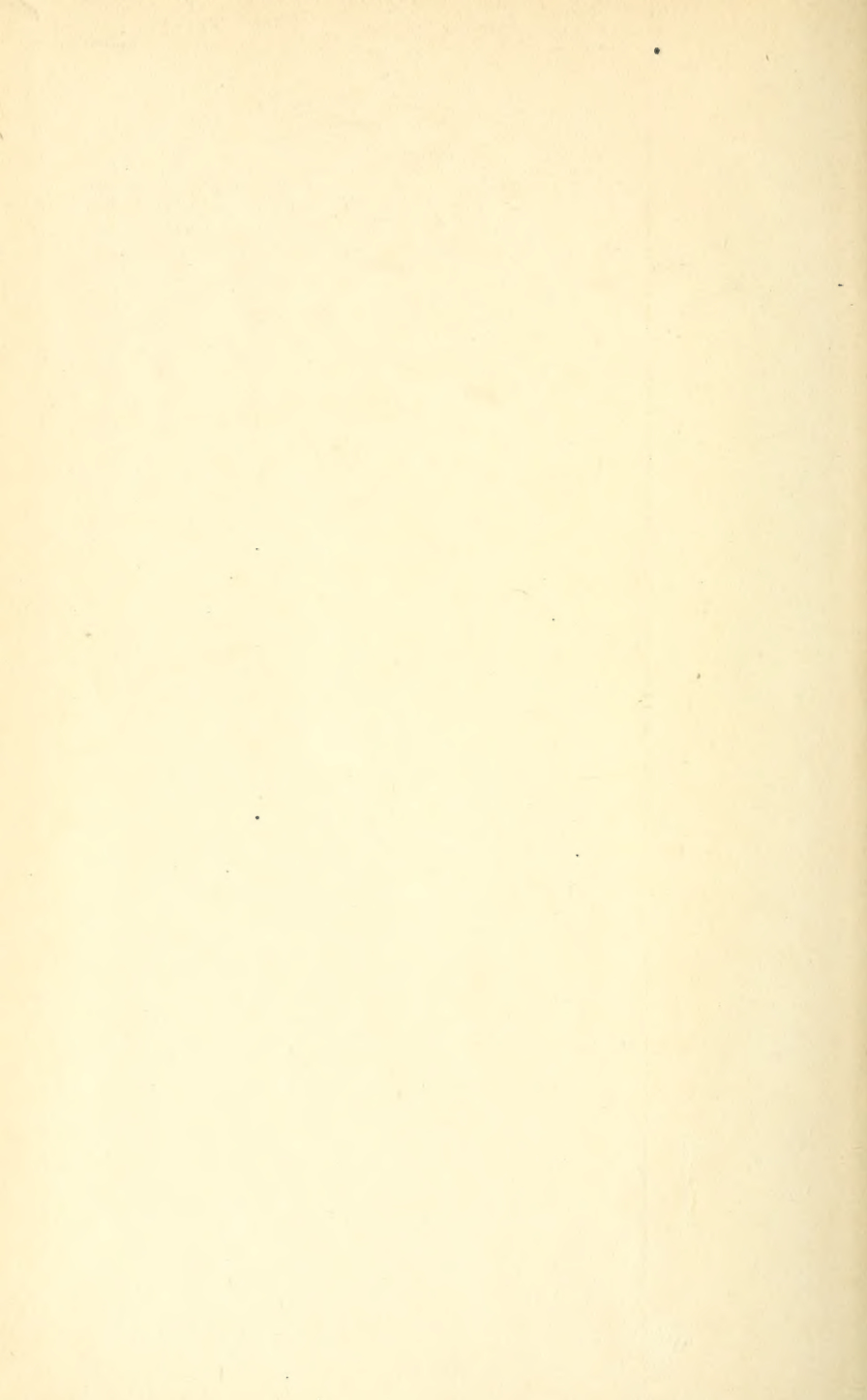
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